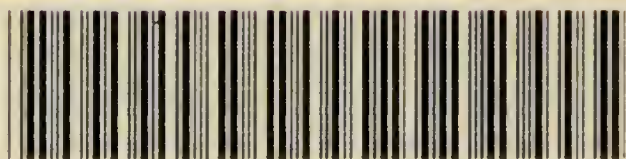




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TUBERCULOUS MEAT.

PROCEEDINGS AT TRIAL

UNDER PETITIONS AT THE INSTANCE OF

THE GLASGOW LOCAL AUTHORITY

AGAINST

HUGH COUPER AND CHARLES MOORE,

BEFORE SHERIFF BERRY,

At GLASGOW, on May 28, 29, 30, 31, and June 1 and 17, 1889.

INTERLOCUTORS, 20th JUNE, 1889.

SANITARY INSTITUTE

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COPY OF PETITION.

UNTO THE HONOURABLE THE SHERIFF OF
THE COUNTY OF LANARK.

The Petition of JOHN LANG, Clerk of the Magistrates and Council of the City and Royal Burgh of Glasgow, acting under "The General Police and Improvement (Scotland) Act, 1862, Order Confirmation (Glasgow) Act, 1877," in execution of "The Glasgow Police Acts, 1866 to 1886," being the Local Authority for Glasgow under "The Public Health (Scotland) Act, 1867."

Humbly Sheweth,—

That the Petitioner has been duly empowered by the said Local Authority for Glasgow to make complaints and take all proceedings on their behalf under the said "Public Health (Scotland) Act, 1867."

That Peter Fyfe, the sanitary inspector for Glasgow, appointed and acting under the said Act, on the Ninth day of May current, in virtue of the powers conferred on him by said Act, particularly section 26 thereof, entered the public slaughter house situated in Moore Street, Glasgow, being "premises" within the meaning of the said last-mentioned Act where carcases of animals were exposed for sale, or which there was probable cause for believing to be intended for human food, and then and there inspected, examined, and seized one of said carcases, viz., the carcase of a bullock belonging to or found in

custody of HUGH COUPER, wholesale butcher, Dead Meat Market, Moore Street, Glasgow, and residing at number 354A Duke Street, Glasgow, which appeared to him, the said Sanitary Inspector, to be unfit for such food.

May it therefore please your Lordship to grant Warrant to cite the said Hugh Couper to appear before you to be heard in answer to this Petition; and if it appear to your Lordship that said carcase is unfit for the food of man, by a writing under your hand to order the same to be destroyed, or to be so disposed of as to prevent the same being exposed for sale or used for such food, all in terms of the said "Public Health (Scotland) Act, 1867."

ACCORDING TO JUSTICE.

(Signed) J. LANG.

[The Petition in the case of the Respondent CHARLES MOORE meat salesman, Meat Market, Moore Street, Glasgow, and residing at number 262 Duke Street, Glasgow, was, *mutatis mutandis*, in similar terms.]

PROCEEDINGS AT TRIAL.

At Glasgow, and within the Old Court, Justiciary Buildings there, on Tuesday, 28th day of May, 1889,—

In presence of ROBERT BERRY, Esquire, LL.D.,
Advocate, Sheriff of Lanarkshire,—

In the petitions at the instance of JOHN LANG, Clerk to the Magistrates and Council of the City and Royal Burgh of Glasgow, acting under the General Police and Improvement (Scotland) Act, 1862; Order Confirmation (Glasgow) Act, 1877, in execution of the Glasgow Police Acts, 1866 to 1886, being the Local Authority for Glasgow under the Public Health (Scotland) Act, 1867, against HUGH COUPER, Wholesale Butcher, Glasgow, and CHARLES MOORE, Meat Salesman, Glasgow,—

Mr. COMRIE THOMSON and Mr. URE, advocates, instructed by the Local Authority for the City of Glasgow, appeared for the prosecution.

Mr. ANDREW JAMESON, advocate, appeared for Mr. Moore, instructed by Mr. P. B. M'Nab, writer, of Messrs Paul & Macfarlan, writers, Glasgow.

Mr. DUGALD M'KECHNIE, advocate, appeared for Mr. Couper, instructed by Mr. David T. Colquhoun, of Messrs. J. & D. T. Colquhoun, writers, Glasgow.

1. *Sheriff Berry*.—Each of these cases has peculiarities of its own, but at the same time I think we must expect that a large portion of the evidence, particularly the scientific evidence, will be such as will relate to the two, and it seems to me that if counsel can take that view, it is desirable that the two cases should go on concurrently.
2. *Mr. Jameson*.—We quite agree about that.
3. *Mr. Comrie Thomson*.—Quite; and I would propose, subject to your Lordship's sanction, that a minute be adjusted.
4. *Sheriff Berry*.—I think so. Perhaps counsel in each case will lodge a minute to that effect, so as to avoid any trouble afterwards.
5. *Mr. M'Kechnie*.—Each adopts the evidence of the witnesses

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1889.

at the end. My friend, Mr. Thomson, remembers a similar civil case in which that was done, and then each counsel may examine on special points.

6. *Sheriff Berry*.—Yes, and not take the evidence so far as inapplicable to that particular case.

7. *Mr. McKechnie*.—Suppose Mr. Jameson were to examine one witness I might adopt him, and I probably might have no questions to ask.

8. *Mr. Comrie Thomson*.—But you might have some questions to ask specially with regard to mine.

9. *Sheriff Berry*.—There is an interlocutor of 24th May, and the point stated there is whether, at the date mentioned in the petition, when these carcasses were seized by the sanitary inspector, the same were unfit for human food? That is the issue to be tried.

The complaints were then held as read.

EVIDENCE FOR PROSECUTION.

Peter Fyfe. Mr. PETER FYFE, *sworn*, examined by *Mr. Comrie Thomson*.

10. You are sanitary inspector of the city of Glasgow under the Public Health Act?—I am.

11. You are also inspector of nuisances under the Glasgow Police Act, and inspector of food and drugs under the Food and Drugs Act?—Yes.

12. I believe you were appointed to those offices in the end of the year 1885?—I was.

13. Now, in your capacity of sanitary inspector, and acting under the 26th section of the Public Health Act, did you, on Thursday, the 9th of May, proceed to the Moore Street slaughter-house?—I did.

14. What did you do when you got there?—I examined the carcase of a bullock, and also the carcase of a cow.

15. Do you know to whom the bullock belonged?—It was said to belong to Hugh Couper.

16. And the cow?—To Charles Moore.

17. Were you made aware that the same carcasses had on the previous day been examined by Dr. Russell, the health officer, and by Professor McCall?—I was.

18. Did you accordingly ask the medical officer to grant you a medical certificate on the carcasses before you examined them?—I did.

19. And did he do so?—He did.

20. [Shown document now produced, and marked No. 3.] Is that the certificate that you got?—Yes, that is the certificate that I got from him.

21. That certifies that in his opinion both animals were affected with tuberculosis and were unfit for the food of man?—Yes.

22. Was one of your inspectors, Mr. Dobson, along with you?—Yes.

23. And when you got to the Moore Street slaughter-house you asked the superintendent to show you the carcasses?—Yes. May 28,
1889.

24. Is that Mr. Hamilton?—Yes. Peter Fyfe.

25. Was there a police constable of the name of Beresford also in attendance?—Yes.

26. And did Hamilton and Beresford accompany you to the compartment where the carcasses were lying?—They did.

27. I understand you first examined the carcass of the bullock?—Yes.

28. Tell us what you found?—On the left side of the bullock the disease was pretty well defined and very red all over the lining of the animal, about six inches by eight, all rosy red nodules and false membrane on the lining of the chest.

29. *Sheriff Berry*.—Is that on the left side of the carcass of the bullock?—Yes.

30. Internally?—Yes, it was about six inches by eight.

31. There were signs of inflammation—nodular inflammation?—Yes.

32. *Mr. Comrie Thomson*.—I think you used the words “rosy red” a moment ago?—Yes, rosy red.

33. You said that that was on the side; tell us what part of the structure of the animal it was on?—I am not an expert, and therefore I cannot give the technical terms; I can simply say that it was on the left side, on the lining, near the pleura—what I understand to be the pleura.

34. What about the right side?—The right side showed exhibitions of a similar character, but much slighter.

35. Was that the corresponding part of the animal on the right side?—On the corresponding part.

36. And also on the lining?—Yes, on the lining.

37. What did you find in the lungs themselves?—I found small greyish nodules. I saw two or three. A small section was cut in my presence.

38. Which side was that on?—I am not certain.

39. It was in the lungs?—Yes, it was in the lungs.

40. What was the apparent consistency of these nodules in the lungs?—I cut into one and I found it was cartilaginous—rather gristly.

41. Is there any familiar substance that you can compare it with, or perhaps that did not occur to you?—It was like gristle. I may say that afterwards I saw nodules cut out of the lung of a different character.

42. By whom?—One by Dr. Wallace of Greenock, and one by Dr. Russell.

43. How would you describe the character of these nodules?—On Wednesday, the 15th, Dr. Russell cut out a piece which was caseated, cheesy, and granulated. We went down to the Pointhouse slaughter-house, and saw the animals in the freezing chamber there, and I saw Dr. Russell cut that out of the bullock. He cut out one.

44. Was it of a cheesy character?—Yes, and also granulated as if it had been an old piece.

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1889.
Peter Fyfe. 45. That was out of the lung of the same animal that you have been speaking of?—Yes. Dr. Wallace also cut one out on the following Friday, the 17th.

46. What was its character?—The same character as that which Dr. Russell cut.

47. You say they seemed to be of older standing than those which you cut out?—I did not cut any; I simply nicked it, and it was gristly and evidently much newer.

48. Did you examine any other portion of the animal?—There was a bit of the skirt which the inspector cut off, and which exhibited the same rosy inflammation as the side. He called it the skirt. I asked him what part it was. It was difficult to distinguish the part.

49. What inspector was that?—Inspector Beresford.

50. Is the skirt the diaphragm?—I cannot say that I know the technical terms.

51. What appearance did it present?—It presented the rosy appearance that I saw on the side—the false membrane on the side, and also nodules.

52. You say rosy appearance; did it seem inflamed?—Very badly inflamed.

53. Did you find that the spleen had been removed?—Yes; I was told it was amissing. I asked Inspector Beresford, and I was told that it was amissing.

54. *Sheriff Berry*.—When was that?—That was on the first visit, on the Thursday.

55. *Mr. Comrie Thomson*.—Did you look at the liver?—Yes.

56. Was there any appearance of disease in it?—I did not see any.

57. Now, from your own examination, and from the medical officer's certificate which you have spoken to, what did you proceed to do?—I informed Mr. Hamilton that I would seize the carcase. Mr. Hamilton is the inspector of the market at Moore Street.

58. Did you seize the carcase?—Yes.

59. Did you desire Hamilton to detain it till he heard further from you?—Yes.

60. You next examined the cow, I suppose?—I did.

61. Describe what you saw.—I saw on the left side of the cow, identically in the same position as I saw in the bullock, the same bright rosy appearance, showing nodular inflammation. Both lungs of the cow appeared to be very badly affected with soft cheesy nodules well defined all through the lungs.

62. Soft cheesy nodules?—Yes.

63. Were they numerous?—Very numerous.

64. In both lungs?—Yes, in both lungs.

65. Did you cut the creature's udder?—I did; at least, Inspector Beresford did it for me in my presence.

66. Was he present at your examination of the cow?—Yes.

67. And Hamilton also?—Yes.

68. What happened when the udder was cut into?—I squeezed

it, and what appeared to be pus came away from it. It exuded very plentifully. May 28,
1889.

69. Was it foetid?—I cannot say that it was.

Peter Fyfe.

70. But it was pus?—Yes; it had the appearance of pus, but I am not an expert in pus. It appeared to be that.

71. Did you form an opinion as to what your duty was in reference to the cow also?—Yes; my opinion as to the cow, strengthened by Dr. Russell's certificate and the nature of the disease, was that it was unfit for food.

72. And did you seize it also?—Yes.

73. Both of these carcasses were considered by you as unfit for human food in terms of the Public Health Act?—They were.

74. Did you desire Hamilton to detain the cow's carcass as well till further orders?—Yes.

75. Did you go next to the Procurator-Fiscal and ask him to get a warrant to have them destroyed?—I did.

76. On the same afternoon, did you send two inspectors, Dobson and Inglis, to call upon Mr. Couper and Mr. Moore in order to see if they would sign a written consent to the destruction of the animals?—I did.

77. But that consent was not signed?—They refused.

78. On the morning of Saturday, the 11th, did you, as instructed by the Procurator-Fiscal, cause these carcasses of which you have been speaking to be removed?—Yes.

79. Where to?—To the freezing chamber at Pointhouse, York-hill.

80. That is a slaughter-house?—Yes.

81. Were they taken there in custody, and put into the freezing chamber in the same condition as when they were taken out of the place where you examined them?—They were.

82. And directed to be kept in that freezing chamber pending the trial of the question?—Yes.

83. I think you told us that you saw them again when Dr. Russell made an examination?—I did.

84. Which day was that?—Wednesday, 15th May.

85. And again on the 17th?—Yes, when Dr. Wallace was present.

86. Who was present on these occasions?—Dr. Russell and the man who had the custody of the carcasses.

87. The carcasses that were submitted to Dr. Russell and Dr. Wallace were the carcasses of the bullock and the cow which you had seized?—They were.

88. *Mr. M'Kechnie*.—You may take it that there will be no dispute about the identity on either side.

89. *Mr. Comrie Thomson*.—Very well, but I thought it proper to put that question.

90. *Mr. M'Kechnie*.—You will not dispute that our experts saw the carcasses, and we will not dispute that yours saw them.

91. *Mr. Comrie Thomson*.—I will not elaborate it, but I have known cases in which there was a little confusion.

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1889.

Cross-examined by *Mr. Jameson*.

Peter Fyfe.

92. Have you ever since you became sanitary inspector made an examination of this kind before?—I have not, officially.

93. Did you ever seize or condemn a carcase before this?—No, I did not.

94. Who is the doctor on whose instructions you generally act—is it Dr. Young?—I did not act under any general instructions.

95. Is Dr. Young the doctor whom you naturally consult in the matter?—No, Dr. Russell.

96. Dr. Young is the police doctor?—Yes, but I never see him.

97. Had Beresford, the inspector, inspected these beasts before he went with you?—I expect he had; I cannot say of my own knowledge.

98. Did he express any opinion to you upon the matter?—Not as to the disease.

99. Apart from the appearances which you described, was the flesh of the cow quite sound?—It appeared to be so, so far as I could see.

100. It had stiffened properly after death?—It appeared so.

101. And was quite hard, good red flesh?—It appeared so—dark a little in colour.

102. Darker in the colour?—Yes.

103. *Sheriff Berry*.—Do you mean darker than usual?—Yes, a little darker.

104. *Mr. Jameson*.—But you lay no stress upon that?—I would not have laid any stress upon it had I not known the animal was diseased.

105. It is not a thing that you would have observed at all but for Dr. Russell's certificate and the internal appearance?—No.

106. There is a considerable difference, I suppose, in the colour of the flesh of different animals?—I suppose there is.

107. Do you not know that?—I suppose there is, but I cannot say that I absolutely know.

108. But you have not much experience of this sort of thing at all?—I have not.

109. *Sheriff Berry*.—Does it not also depend upon the time when the animal was killed?—I presume it does.

110. *Mr. Jameson*.—And upon the age of the animal also?—Yes.

111. Veal is white and beef is red?—Yes.

112. About the nodules in the cow, were not the nodules that you have spoken to confined to the top parts of the lung—the apex of each lung?—That was the only part of the lung I could see, and I can only speak to it.

113. But you did not examine the other part?—I did not.

114. And you tell us that the lung had no external appearance of nodules, and you had to cut them before you could see them?—Yes, I cut them.

115. *Sheriff Berry*.—Is that the case of the cow?—Yes.

116. *Mr. Jameson*.—They had no appearance of nodules or tubercles on the outside that you saw?—I did not see any.

117. Did the cow appear to be a cow that had been formerly used as a milch cow?—I could not tell you that. May 28,
1889.

118. Your knowledge does not enable you to tell that from the state of the udder?—No, I am not an expert in that. Peter Fyfe.

119. How could you tell that what you saw exuding from the udder was what you call pus?—It appeared to be pus.

120. Was it from its appearance?—Yes; it was yellowish soft matter like what pus is all over the world, so far as I have seen it.

121. You could not say whether it had anything to do with the milk that the cow had been formerly employed to give?—No.

122. Or whether it was the milk going off?—No, I cannot say.

Cross-examined by *Mr. M'Kechnie*.

123. In regard to the bullock, were you able to form any idea as to the age of the animal?—Not of my own knowledge. I was told it was about two years old.

124. Can you say anything in that case with certainty from your own knowledge?—Yes.

125. What?—I can say that I seized it under the Public Health Act.

126. Can you say anything else of your own knowledge?—Yes, I can say that I examined it.

127. Anything else?—Yes, that I found strong inflammation on both of them.

128. Strong inflammation where?—On the chest.

129. What do you call the chest?—I think everybody understands that.

130. I do not; I am one ignorant person.—I call it that part of the animal where the lung is supposed to lie.

131. That part outside the lungs?—Yes.

132. Do you mean to tell us that in this bullock you found any inflammation in the flesh of the animal?—No, I did not look for it there.

133. What you found was inside the chest?—What I found was in the inside lining of the chest.

134. That is to say, not on the covering of the lungs?—The membrane.

135. There is a membrane covering the lungs, and a membrane inside the chest covering the chest?—Yes.

136. On which of these was it that you saw inflammation?—It appeared to be the membrane covering the chest.

137. And the lungs were unaffected?—No, they were not; I saw nodules on the lung that day.

138. What part?—The top of the lungs.

139. On the apex of the lungs?—Yes.

140. Was that part affected about the size of the human hand?—No, it was not in that way at all. It was here and there, little nodules.

141. How extensive was the part affected?—The part would be about 3½ inches long.

142. It was the affected part?—That part was affected.

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1889.
Peter Fyfe.
143. About three inches long and how much broad?—About an inch and a half I should say.
144. That is at the top of the lung?—Yes.
145. Of one of the lungs?—Yes.
146. About three inches long and two broad?—Yes.
147. And you cut it away?—No, I made an incision in it.
148. That, I understand, was in the lung itself?—Yes.
149. The membrane surrounding the lung was not affected?—I did not see it.
150. You are inspector, you say?—I did not see——
151. Did you not go there to see?—There was no membrane on the lung.
152. *Mr. Comrie Thomson.*—This is not a scientific witness.
153. *Mr. M'Kechnie.*—He is a man that condemns animals. (To witness) You saw the animal?—It was inflamed on the lining of the chest.
154. Was there anything on it but inflammation?—Small nodules.
155. On the membrane of the chest—did you remove these?—No.
156. How many were there?—They were countless. The last time I saw them they were there—on 17th May.
157. Was the animal a well nourished animal?—Yes, it appeared to be.
158. The flesh was good?—Yes.
159. And you saw nothing wrong with it except what you have described?—No.
160. I suppose you have a great many duties to do in Glasgow?—I have.
161. And the inspection of the carcasses of animals is a thing that you very rarely attend to?—Yes; this is the first I have attended to officially.
162. Do you seize animals unofficially?—I have gone with Dr. Russell to examine them unofficially.
163. And this is the first case in which you, as inspector under the Public Health Act in Glasgow, seized the carcase of an animal officially?—Yes.
164. Why did you do it this time—why did not the police seize it?—I cannot say that.
165. It is usually done by the police?—Yes, in Glasgow.
166. If the police surgeon had refused to give a certificate, that would account for it?—I cannot tell you that.
167. Who asked you to do it?—I was asked if I would do it by Mr. M'Phee, the Procurator-Fiscal.
168. And Mr. M'Phee never asked you before if you would do it?—No.
169. This is a new thing altogether in Glasgow—the seizure of carcasses by the inspector under the Public Health Act?—I think that is recognised by all.
170. That is so?—Yes.
171. *Sheriff Berry.*—What is recognised?—It is a new departure in Glasgow.

Re-examined by *Mr. Comrie Thomson*.

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1889.

—
Peter Fyfe.

172. Hitherto the proceedings with reference to diseased meat had been taken under the local Police Act?—Yes, that is so.

173. And the officials who seized it or impounded it were the police officials?—Usually. I cannot say that the carcase had been seized.

174. Previously?—Yes.

175. And this is the first prosecution in Glasgow under the Public Health Act with reference to meat unfit for man?—That is the case.

176. *Mr. Comrie Thomson*.—My friend makes a suggestion which I think we must submit to your Lordship, that the skilled witnesses on both sides might be in Court to hear the evidence. So far as I am concerned, I think probably that is the advantageous course to take—advantageous for the case I mean. Of course, both sides must be in or none.

177. *Sheriff Berry*.—Have you many skilled witnesses?

178. *Mr. Comrie Thomson*.—A good many.

179. *Sheriff Berry*.—What do you say to that, Mr. Jameson?

180. *Mr. Jameson*.—I think the only advantage of having the experts in while the evidence is being led is that such of them as did not see the animals might have the appearances described by the witnesses who saw them at the time; but beyond that I do not see that there can be any advantage, but, on the contrary, considerable disadvantage in experts listening to the examination and cross-examination of other experts.

181. *Mr. Comrie Thomson*.—I did not make the motion.

182. *Mr. M'Kechnie*.—I suggested it for consideration, whether the experts should not go out.

183. *Sheriff Berry*.—It is obviously of advantage that the experts should be present to hear the condition of the animals at the time they were seized, but beyond that I see that there might be a difficulty in experts listening to the examination and cross-examination of other experts, and being thus, to a certain extent, guided as to the line they should themselves follow.

184. *Mr. Comrie Thomson*.—We might follow the course adopted in medical cases where a case of insanity is raised, and have them present during the evidence as to facts, and then they should go out.

185. *Sheriff Berry*.—I think that is the proper way. They may be here so long as the witnesses are speaking to facts.

JOHN M'LELLAN, *sworn*, examined by *Mr. Ure*.

John
M'Leilan.

186. Are you an inspector of police in the eastern district of Glasgow?—Yes.

187. Is the Moore Street slaughter-house in your district?—Yes.

188. And do you supervise there the inspection and passing of meat by Constable Beresford?—I do.

189. Have you been engaged in that duty for the last 17 years?—Between 16 and 17 years.

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1889.
John
M'Lellan.
190. On Wednesday, 8th May, did you decline to pass two carcasses?—Yes, I detained them.
191. The one was a bullock, and the other a cow?—Yes.
192. To whom did the cow belong?—To Charles Moore, salesman, meat market.
193. And the bullock?—To Hugh Couper.
194. Why did you refuse to pass the cow?—Because I was instructed by Chief-Constable Boyd to pass nothing I could see a speck of disease upon.
195. Did you see any disease on the cow?—Yes.
196. What?—The tip of the lung was affected with some tubercles, and a small part on the left side.
197. You saw that?—Yes.
198. Why did you stop the bullock?—It had an inflammatory rush on the left side, like the formation of tuberculosis, or a little inflammation.
199. Did you ask three medical men to examine the carcasses?—Yes, Professor M'Call, Dr. Russell, and Dr. Young.
200. Meantime you detained the carcasses at the slaughter-house?—Yes.
201. Did Sanitary Inspector Fyfe see them the following day?—I believe he did, but I was not present.
202. Were the carcasses removed to Yorkhill refrigerator?—They were removed on Saturday, but where they went to I cannot tell.
203. While they were in Moore Street slaughter-house you showed the carcasses to several medical men?—I did.
204. *Mr. Ure.*—I don't take the names, because my learned friends have admitted that the carcasses were shown to our witnesses.

Cross-examined by *Mr. Jameson.*

205. You have been 17 years inspecting at the market?—Yes.
206. Twelve years as inspector, and five years as sergeant?—Yes.
207. During the whole of that period you have had charge of the inspection of the meat?—Yes.
208. Was the flesh of this cow, except to the extent that you have described, healthy?—Very healthy.
209. Had it stiffened and hardened up very well after killing?—Yes, it cut well.
210. No trace of disease in the fleshy tissues of the animal at all?—No traces that I could see.
211. And are you prepared to say that the flesh of that cow, except on the lungs and the inner membrane where you saw it, was perfectly healthy flesh?—I am prepared to say that so far as my observation went, it was perfectly healthy flesh.
212. And fit for human food?—I would say fit for human food.
213. Where you have in your experience seen animals affected internally in the lungs with a certain amount of tuberculosis, but the flesh has been perfectly healthy, what has been your

practice with regard to such animals hitherto?—When they were slightly affected and the flesh perfectly healthy, we were in the habit of condemning the intestines and passing the carcase.

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1889.

John
M'Callan.

214. Do you also know cases of tuberculosis where it had become general through the animal?—Yes, any amount of them.

215. And you condemned them?—When it becomes generalised I do not pass them.

216. Is there an established distinction in practice in the meat market between animals that are locally affected with tuberculosis and those in which the disease has become general?—Yes.

217. And the former have always been regarded as fit for human food while the others have been condemned?—Yes.

218. How many animals have you been in the custom of examining per week—what is your average?—I would say above 1000 a week are passed in Moore Street slaughter-house.

219. Of these 1000 what is the average of animals affected with tuberculosis more or less?—Maybe 4 or 5 in the thousand.

220. Most of them are cows, I think?—Most of them are cows.

221. *Sheriff Berry*.—Do you mean five condemned in a thousand?—No, affected.

222. *Mr. Jameson*.—Of these four or five how many would be condemned as unfit for human food?—About one-half I think, on a near calculation of those that are affected with tuberculosis would be condemned and the other half passed. I think that would be about the average.

223. Was that because half of them were affected generally with tuberculosis and the others only locally?—Yes, perhaps in their lungs and the carcases not at all touched.

224. Does your experience enable you at once to detect instances of tuberculosis in an animal?—Yes, I know it at once; I have no trouble.

225. On 30th April you detained some meat that Dr. Russell and Professor M'Call passed?—I did, two sides of beef.

226. These were sides of beef, the carcase of the animal, and not the internal part?—Yes. It came from the country, and it was split in two halves, and we call that two sides of beef, but it is a carcase all the same.

227. When sent in in that shape, the lungs and all the inside are taken out?—Yes.

228. And what is sent are two sides of beef?—Yes, the intestines had not been sent along with them.

229. And you condemned these two sides?—Yes.

230. They belonged to Mr. Scott?—Yes. I did not condemn them, but I detained them and sent for Professor M'Call and Dr. Russell and Dr. Young.

231. And they examined them, and passed them as fit for human food?—Yes.

232. Tell us what was the matter with them?—They were affected with tuberculosis. The abdomen was affected. They were stripped down from the abdomen. The whole walls of the carcase were stripped and the flanks of the abdomen were covered, and the left kidney was a pretty rough job. A number

May 28, 1889.
 John M'Lellan. of the tubercles were left on the carcase which enabled me to see what was wrong with the carcase; there is no doubt about that.

233. Would you describe that animal as being generally affected with tuberculosis?—It was generally affected, because it was up to the flanks on the walls of the carcase, and that I would call generally affected, but I must say that they were fair good sides otherwise.

234. I think about the same time you condemned two other sides of country beef belonging to a Mr. Perrett?—Yes, I refused to pass them owing to instructions from our present Chief Constable.

235. And he agreed at once to their being seized?—Yes.

236. Were these two sides sent from the country?—Yes; it is just the carcase.

237. In both of these carcasses the parties to whom they were consigned agreed to give them up?—Pirret agreed to give his up at once. He was a little reluctant, but he gave it up; and Scott gave them up, but he changed his mind perhaps in less than two minutes, and he cried me back and said that he would like very well if I would send for Professor M'Call and the two doctors, and I did so.

238. And then he got them back?—They passed them—no doubt about that.

239. It was on 26th April that you received instructions from the Chief Constable to detain all carcasses which had the slightest sign of tubercular disease inside or out?—Yes.

240. So that when you found an animal with nothing but a speck of tuberculosis on its lungs, you were to condemn it?—Yes, to detain it.

241. Although otherwise it was perfectly healthy?—Yes.

Cross-examined by *Mr. M'Kechnie*.

242. Would you have condemned the bullock at all or thought of seizing the bullock but for the special instructions of 26th April?—No. It was a good bullock, and very little wrong with it.

243. You have been there seventeen years, but inspector for twelve years?—Yes.

244. Inspector of Moore Street market for twelve years?—Yes.

245. During all those twelve years, or, indeed, I may take the seventeen years, have you ever known of a two-year-old bullock being condemned for tuberculosis?—Never.

246. You never heard of such a thing?—No.

247. I suppose if you had been left alone, and if your superior officers had not given you instructions, it would have lain with you to say whether or not the owner of the carcase of the bullock would be allowed to take it away at once?—Yes, but the small membrane would have to be stripped off.

248. If you had been left to your own judgment, would you have allowed Mr. Couper to take away the bullock?—Oh, certainly.

249. That is, after the usual amount of dressing?—Yes; the lungs would be condemned.

250. *Sheriff Berry*.—If he had taken out the portions that you saw diseased?—Yes, the small membrane. May 28,
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251. *Mr. M'Kechnie*.—You would have allowed the cow to go also?—Yes. John
M'Lellan

252. It is only when you have a doubt that Professor M'Call or any doctors are called in?—Professor M'Call and Dr. Russell and Dr. Young are called in now in every case.

253. There is a new departure in Glasgow in that also?—Yes; hitherto Dr. Young only was called in and two practical butchers when any disputed case took place.

254. Up to 26th April?—Yes, and for many years past, it was always Dr. Young and two butchers.

255. A committee of two butchers?—Yes.

256. And that was found to be quite satisfactory?—It was satisfactory.

257. *Mr. Comrie Thomson*.—For Dr. Young and the police?—Yes.

258. *Sheriff Berry*.—Were these butchers called specially in for each occasion, or were there two butchers named to act in all cases on this committee?—When the owner of any animal refused to give in to the disease, I by myself and those who acted along with me went for Dr. Young, and he got two practical butchers in the trade.

259. *Mr. M'Kechnie*.—Any two?—Yes, any two. If they agreed with me that the animal should be totally condemned, then I told the owner; and if Dr. Young and the butchers agreed with me, he would take it before the magistrates.

260. The owner was summoned?—Yes, unless he gave it up.

261. And he often did give it up?—Yes, almost in every case.

262. But if Dr. Young and the butchers did not agree with you?—The butcher got it away.

263. But it always lay with you, up to 26th April, to say in the first place whether the animal should be detained or not?—Yes.

264. You were the judge of first instance?—Yes, but they had an appeal from me.

265. But that was the way in which this matter was attended to under the Police Act in all your experience?—Yes.

266. And this is the first instance of a departure from that system?—Yes.

267. In your judgment, did the system work quite satisfactorily?—I think it did.

268. There were very few prosecutions?—Very few prosecutions.

269. Did you find that the owners of animals were always willing to submit to the judgment of the tribunal composed of the police-surgeon and the butchers?—They might have felt aggrieved.

270. The people who lose their cases always do?—But they were not prepared to meet the matter in the Police Court.

271. They relied upon that tribunal?—Yes.

272. Has it been quite the custom in Glasgow, and quite well known in Glasgow among the trade, to keep parts of affected animals and allow the butcher to sell the other parts?—Yes.

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 —
 John M'Lellan. 273. Did that apply in those cases where the internal parts were affected and the flesh of the animal was not?—Yes, it applied where the intestines were not fit for human food, and the carcase was otherwise good.

274. I believe for the last ten years, from Moore Street market alone, you have allowed 1909 carcasses to be taken away, the intestines being condemned or partly condemned?—Yes, about that number within the last ten years—about 2000.

275. Or 200 a year?—Yes.

276. *Mr. Comrie Thomson*.—I assume that that includes all diseases?

277. *Mr. M'Kechnie*.—No; that includes diseases under the Public Health Act of tuberculosis only. (To witness)—Does it not?—Only tuberculosis.

278. *Sheriff Berry*.—The diseased portions were taken out, and what you regarded as the healthy portions passed for sale?—Yes.

279. *Mr. M'Kechnie*.—The diseased portions being always the internal organs or portions of the internal organs?—All condemned.

280. But what you condemned was always something internal?—Yes.

281. I suppose you never in your life allowed anything to go past you that you thought unfit for human food?—I never passed a pound in my lifetime that I was not prepared to take a part of myself.

Re-examined by *Mr. Ure*.

282. I understand that your inspection was simply confined to an examination by the eye?—Yes.

283. And when you saw any part of an animal diseased, you had it cut up?—Yes.

284. And the rest of the carcase passed?—It depended upon how far it was affected.

285. You were acting up to 26th April under the Police Act?—Yes.

286. And the sanitary people were then called in?—Yes.

287. You said that it worked satisfactorily up to that time; what did you mean by that? Is it that you had no quarrels with the butchers?—There was no general complaint.

288. With regard to the two sides of beef that you showed to Dr. M'Call and Dr. Russell, had you cut away the tubercular parts before you called in the medical men?—I cut away nothing.

289. Was it stripped and dressed?—It was stripped and dressed before it came into the meat market at all.

290. And you did not explain anything at all—you just allowed them to examine it?—Certainly.

291. *Mr. Jameson*.—Did Dr. Russell and Dr. M'Call see it exactly as you saw it?—They did.

292. *Sheriff Berry*.—You said that there had been 2000 animals affected by tuberculosis dealt with in the way you mentioned in ten years. Can you tell me how many you would

have passed in ten years altogether?—There were perhaps 36,000 or 37,000 carcasses passed each year.

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293. And that would be about 360,000 probably passed in ten years?—Yes.

John
M'Lellan.

ROBERT BERESFORD, *sworn*, examined by *Mr. Comrie Thomson*.

Robert
Beresford.

294. You have acted as meat inspector in the Moore Street slaughter-house for the last fourteen years, I think?—Yes.

295. Under the last witness?—Yes.

296. Until about a month ago, where the carcasses were slightly affected with tuberculosis, your practice was to cut out the affected part, and to pass the part that was apparently unaffected?—Yes.

297. Since that time you have received instructions that you were not to pass any animal which showed symptoms of this disease, till you had submitted it to Professor M'Call, Dr. Russell, and Dr. Young?—Yes.

298. I believe the previous practice had the sanction and approval of Dr. Young?—Yes.

299. And he was acting, and you were acting, under the Glasgow Police Act?—Yes.

300. In accordance with these later instructions, did you detain for examination, on Wednesday, 8th May, the carcass of a bullock belonging to Mr. Couper, and the carcass of a cow belonging to Charles Moore?—Yes.

301. Did you notice if there was anything the matter with the cow?—I noticed in the cow, at the end of each lung, a little tuberculous matter.

302. Do you mean the upper part?—The upper part was clear.

303. Was it the lower part?—The bottom part—the two ends of the lung were affected, but the top part was quite clear.

304. It was affected with tubercles?—Yes.

305. Did it seem to be of some little standing?—I thought it was at a very mild stage.

306. There were nodules?—Yes, nodules on the left chest of the carcass.

307. In the lining?—Yes.

308. As well as this condition of the lining that you have mentioned?—Yes.

309. In the bullock did you also see some appearance of tuberculosis?—On the bullock I would go the length of saying that it was in the preliminary stages of it—at the commencement of it. On the lungs there was a little inflammatory matter, but not tubercular matter, as it were, in the first stages of it; and in the left lung of the carcass I saw where the lung had been striking like the formation of tuberculosis, but not tubercular to the naked eye, and below the skirt there was also a little ulcerated matter.

310. Is the skirt the diaphragm?—Yes.

311. The membrane at the bottom of the lungs?—Yes.

312. There were three places in which the bullock was affected,

May 28, 1889. although you thought it was in the commencement rather than the completion of the disease?—Yes.

Robert Beresford. 313. The lung itself, the lining, and below the skirt?—Quite so.
314. There was inflammation perceptible in all these places?—Yes.

315. And the formation of tuberculosis?—Yes, but at a very early stage.

316. The three doctors whom I have mentioned examined the carcasses, and they remained in your charge till 9th May, when they were formally seized by the sanitary inspector, Mr. Fyfe?—Yes.

317. Were they committed to the care of Mr. Hamilton, the inspector of markets?—Yes.

318. At the time of this formal seizure, were they kept by themselves under lock and key?—They were.

319. Although Hamilton had formally charge of them, Inspector M'Lellan and you had them in your custody, and it was you who showed them to the skilled witnesses?—Yes.

320. Did Robert Inglis, sanitary inspector, remove the carcasses to the Yorkhill refrigerator?—Yes.

321. While the carcasses were in the slaughter-house, did you show them on 8th May to Professor M'Call, Dr. Russell, and Dr. Young?—Yes.

322. And on 9th May to Professor Limont, to Mr. Maylard and Professor Walley, Dr. Littlejohn, and Dr. Coats, and on the 10th to Principal Williams?—Yes.

323. *Mr. M'Kechnie.*—Am I to prove in detail that he showed them to our witnesses?

324. *Mr. Comrie Thomson.*—I understood that you admitted that—if there is no risk of any confusion.

325. *Mr. M'Kechnie.*—No risk whatever.

Cross-examined by *Mr. M'Kechnie.*

326. Are you, and the last witness, M'Lellan, the only inspectors in Moore Street?—There is another one, but he is newly appointed. We are the only two who have been there for the last fourteen years, till within the last two months. I have got an assistant.

327. That is quite enough; for the last fourteen years have the magistrates in Glasgow trusted you and M'Lellan alone as the experts in that market?—Yes, they have.

328. Till 26th April?—About a month ago.

329. They began making light of you then?—Yes.

330. Did you ever hear a whisper before that, or even after that, that you and M'Lellan were not perfectly competent to say what was and what was not fit for human food?—There was never anything said about it.

331. So that everybody was quite satisfied?—Yes.

332. Is M'Lellan your superior officer?—He is an inspector of police; he is my superior. My duty is solely with regard to the slaughter-house.

333. And you are always there?—Yes.

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Beresford.

334-5. And he comes in and consults with you?—Yes.

336. And the two of you apply your minds to it together?—Yes.

337. Now, I want to ask you about this bullock, could the human eye, meaning your own eye in this case, detect any tubercle about the bullock at all?—I could not see any tubercle about the bullock.

338. Did you notice that the bullock had been rather overdriven?—Well, I would take it a good deal for that. I have seen symptoms of the same thing in my experience.

339. Did you at the time think that the animal had been overdriven on the way to the slaughter-house?—I would think so.

340. And overheated?—It has a tendency to do that.

341. And that has a tendency to produce inflammation?—It has.

342. Both in man and beast?—Well, I think so.

343. And that might quite well have accounted for the appearances you saw in the bullock?—I took that inference from it at the time, and I told Mr. Couper that I thought it better to stand until better judges could see it.

344. That is because you had special instructions?—Yes.

345. But if you had not had these special instructions of 26th April, would you have passed that bullock without any hesitation?—Decidedly. I would have stripped it down, and cut off the part that was affected, and destroyed the lung, and passed the carcase.

346. Would you have destroyed anything but the lungs?—I would have destroyed nothing but the lungs.

347. What condition was the bullock in?—Very good.

348. It was a two-year-old?—A two-year-old, about two and a-half years old, what I would call a prime bullock.

349. Fit for a duke's table?—Oh, yes.

350. Now, with regard to the cow, if you had had no instructions would you have condemned the carcase of it?—I would not.

351. Have you repeatedly, and by that I mean hundreds of times, passed carcasses of cows in a much worse condition?—I have.

352. For the last fourteen years?—Yes.

353. What would you have done in the case of the cow before allowing the carcase to pass?—I would have got the man who dressed the carcase, and have cut off the skirt and stripped the pleura down, and taken the nodules off it. I would have taken the viscera, that is the lungs, the liver, and all the viscera, and destroyed them, but passed the carcase.

354. Had the cow any symptoms of tuberculosis?—Yes.

355. Were they general or local?—Well, it was local.

356. Was the cow at all emaciated?—No.

357. Did Dr. Young see the carcasses of these two animals?—He did.

358. When did he see them?—He saw them along with Professor M'Call and Dr. Russell.

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Beresford.
359. Did he condemn them or either of them?—I cannot say for that.
360. You don't know what he said?—No.
361. But he saw them along with the other experts?—Yes.
362. Do you remember two sides of a beast coming in one day belonging to Mr. Scott and Mr. Perrett?—I do; I think it was about the 30th of April.
363. These sides, of course, when put together formed a carcase?—Yes.
364. They had come in from the country?—Yes.
365. Does a beast that comes in from the country come in dressed?—It does.
366. So that in that case, if there had been tubercular affection of the internal membranes, it would not be visible because the membranes are away when the animals are dressed?—That is so.
367. Although the carcase was so dressed, did you observe any evidence of tuberculosis?—Oh, yes.
368. Affecting the carcase itself?—Yes.
369. The flesh itself?—Yes. Mr. Scott was present at the time and I called his attention to it. I said, "Now, seeing we have got——"
370. I don't think you need give us that; but you were satisfied that there was tuberculosis?—Yes.
371. And M'Lellan saw it also?—Yes.
372. Was that local or general tuberculosis?—General throughout the whole system.
373. You are quite familiar with it?—Yes, up to the very top.
374. And that is a kind of thing which you have been condemning for the last fourteen years as being unfit for human food?—Yes.
375. You never would have passed that animal that you saw?—I did not see the viscera, but I formed the opinion from seeing the carcase that it had been very bad, although the carcase was in good condition.
376. The carcase was in good condition, but there was tubercular affection of the tissues?—Yes.
377. Tubercular affection or patches?—Yes, patches.
378. Describe the size of them.—First, when I examined the carcase below the kidneys, I saw large growths—what they call nodules. I took two of them off; they were about an inch long each of them, and I told Mr. Scott who was there, and Mr. Scott saw them himself.
379. These two sides were shown to Professor M'Call and Dr. Russell?—They were.
380. And these gentlemen passed them as fit for human food?—Yes.
381. And I suppose they became human food?—Yes.

Cross-examined by *Mr. Jameson.*

382. Was the rest of the meat of the cow, apart from the lungs, perfectly good sound meat?—Perfectly good.
383. Hard and firm?—Hard and firm and in good condition.

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Beresford.

384. And fit for human food?—Yes.

385. Was there any sign of tuberculosis in the carcase of the cow except in the internal organs, as you have described?—Yes, on the left chest. There was about the breadth of your hand of nodules growing—just localised as it were.

386. But apart from that, was there any symptom of it in the flesh?—I could not see any.

387. You are well acquainted with tuberculosis?—I ought to be now.

388. It was described and pointed out to you by your predecessor in office, I believe?—Yes.

389. And you have been accustomed to observe it all these fourteen years since?—Yes.

390. And you think you could detect tuberculosis probably better than even a scientific man could?—Well, I have nothing else to do.

391. You are perfectly familiar with the appearance of it in the flesh of animals, as well as in the viscera or lungs?—Yes.

392. And there was no appearance of it whatever in the carcase of this cow which has now been kept and which it is sought to condemn here?—No.

Re-examined by *Mr. Comrie Thomson*.

393. It is the import of your evidence, I think, that you are a better judge of the existence of tuberculosis in a carcase than Professor M'Call or Dr. Russell—that is what you say—don't be modest about it?

394. *Mr. M'Kechnie*.—Are you going to discredit your own witness?

395. *Mr. Comrie Thomson*.—I am not discrediting him; on the contrary, I am cracking him up. (To witness) That is so, is it not?—Well, I have seen a good deal of it.

396. That is scarcely answering my question; you think that, in this case at any rate, you are a better judge than these two gentlemen, that is, in the case of Perrett and Scott?—I think myself, if they had been looking minutely at it, and saw the nodules over it——

397. Did you point it out to them?—I was not there—they were there themselves.

398. Are you aware that no suggestion was made to them of that kind that there was anything the matter with the animal?—They never called me in.

399. You don't know what passed?—No; they were in the room by themselves where the carcase was.

400. Are you aware that they were not told that there was anything suspicious about the animal?—I did not tell them. If Mr. M'Lellan told them I did not; I did not tell them anything.

401. And you don't know that he told them anything?—No.

402. Then tell me this, how much of the cow that is now in question would you have removed before allowing the rest of it to be passed?—I would cut the skirt off, and I would have stripped down the pleura portion, and I would have given them

May 28, 1889. the whole carcase, but I would have taken the offal—that is, the viscera.

Robert Beresford. 403. You would have taken away the lungs, I presume?—Yes, the liver, the heart, and all the viscera.

404. But I want to know how much of it would you have removed as affected more or less by tuberculosis?—All the parts that I could see with the naked eye were affected.

405. How much were they in the case of this cow?—I would just take the viscera, that is all.

406. But would you not have taken a portion of the animal which would otherwise have been used for food?—No; I would have given the whole animal.

407. You would have stripped the pleura, would you not?—Yes.

408. And the whole viscera would have been removed?—Yes.

409. Then, what portion of the bullock would you have removed?—I would have done the same thing with the bullock.

410. There were portions in both, considerable portions in the cow and a smaller portion in the bullock, that you thought were affected?—Yes.

411. What you said about the overdriving of the bullock would not produce tuberculosis, I presume?—No.

412. Then, you saw tuberculosis in addition to certain effects that you thought were due to overdriving?

413. *Mr. M'Kechnie.*—I object to the question, because it is put upon the assumption that he saw tuberculosis.

414. *Mr. Comrie Thomson.*—Well, I put it upon that assumption. (To witness) You saw the formation of tubercles?

415. *Mr. M'Kechnie.*—You cannot put it on any such assumption. This is re-examination, and the witness said that he saw no sign of tubercles about the bullock at all. In cross-examination I put the question, “Could the human eye (meaning by that his eye) see tubercle there?” and he said “No.” Now, in re-examination it is perfectly competent to clear up any matter by putting it upon an assumption of fact which the witness has spoken to, but not by putting an assumption which is contrary to the evidence of the witness, and using the word tuberculosis.

416. *Mr. Comrie Thomson.*—(To witness). The reason why you would have removed the portions of the bullock and passed the rest was, I understand, that you saw what you have described as the commencement of the formation of tubercle?—Well, I formed that opinion at the first.

417. And you have that opinion still?—Well, yes, I still stick to that opinion; but it may be brought on as a rush with hard driving too, but not in the tubercular part.

418. You know a great deal about this subject—a great deal more than anybody here—and therefore I want to put it to you, are you aware that the tubercle is a thing which develops gradually, and is not produced by overdriving?—Yes, I am aware of that.

419. Then, don't you see that you grant me this—that, in your view there were two separate things accounting for the condition

of this bullock. You say that part of the inflammatory side may have arisen from overdriving—that is one thing; but over and above that, you saw signs of the formation of tubercle?—Well, I would go that length.

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Beresford.

420. That is all the length I want you to go, because that is the truth.

421. *Mr. McKechnie*.—With your Lordship's permission, may I be allowed one question as to this? (To witness) Did you see any formed tubercles?—Well, the only form that I saw——

422. Answer the question as I put it; did you see any formed tubercle?—Of tuberculous matter?

423. Yes.—Well, I would just have fancied that it was that. I did not see what it was, but I imagined that it was the formation of it.

424. That is to say, you imagined that it might have come to that?—Yes; it was not just a clear case that you could make any great distinction with.

425. Could you say that it was incipient tubercle, or that it was the result of overdriving?—Well, I would say that if the germs of tuberculosis were in it, the overdriving would have an effect on this inflammatory matter and rush it on quick.

426. That is all you say?—Yes.

DANIEL HAMILTON, *sworn*, examined by *Mr. Ure*.

Daniel
Hamilton.

427. Are you the superintendent of markets at Moore Street?—Yes.

428. Do you remember, on the 9th of May, of the sanitary inspector, Mr. Fyfe, seizing two carcasses?—Yes.

429. Do you know to whom the carcasses belonged?—Yes; the carcass of the bullock to Mr. Couper, and the carcass of the cow to Mr. Charles Moore.

430. What did you do with these carcasses?—The policeman locked them up.

431. Did you keep the key?—No; the policeman kept the key.

432. Which policeman?—Beresford.

433. Were they detained in that locked apartment until Saturday, 11th May?—Yes.

434. And on that day were they removed?—They were removed.

435. By whom?—On the instructions of the sanitary inspector.

436. To where?—To Yorkhill.

437. *Mr. McKechnie*.—I understand my friend is now to put it upon us to prove the identity of the animals shown to the experts. I understood we were to get an admission that the animals shown to the experts on both sides were the same animals.

438. *Sheriff Berry*—I thought so.

439. *Mr. Comrie Thomson*—That was my expectation, but my instructions are such that unless I learn from my learned friend—for I do not know yet—who were the persons to whom, on his behalf, these carcasses were shown, I must proceed as I am doing.

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Daniel
Hamilton. After some discussion, *Mr. Comrie Thomson* said he was prepared to give the admission desired. He then stated that that finished that part of the case, and that the next witness he proposed to call was Dr. Russell.

The expert witnesses were then desired to leave the Court.

Dr. J. B.
Russell.

Dr. JAMES BURN RUSSELL, *sworn*, examined by
Mr. Comrie Thomson.

440. You are an M.D. and an LL.D. ?—I am.

441. And you have been medical officer of health for Glasgow since the year 1872 ?—Yes.

442. You are also president of the Glasgow Philosophical Society ?—Yes.

443. Did you, on the 8th of May, inspect the carcase of a bullock said to belong to Hugh Couper which was in Moore Street slaughter-house ?—I did.

444. Will you describe the symptoms which you found upon the bullock ?—The pleural surfaces on both sides, but especially the left, were diseased.

445. What was the disease ?—The disease, in my opinion, was tuberculosis. The under surface of the diaphragm presented the most characteristic appearances, on the left side particularly.

446. Is that the pleural surface of the diaphragm ?—The pleural surface of the diaphragm.

447. And was there also tuberculosis on the costal pleura on one side ?—Yes.

448. Which side was that ?—The left side, and also on the right side to a less degree.

449. Would you describe the condition of the disease as chronic or acute ?—It was acute.

450. Did you examine the left lung ?—Yes. The surface of the left lung was covered with inflammatory lymph, so that it had apparently been adherent to the walls of the chest.

451. That would arise from inflammatory action of some sort ?—That was the result of the inflammatory action——

452. Of pleurisy ?—Of pleurisy.

453. What do you think that pleurisy had been caused by ?—Most probably the irritation of the tubercular virus.

454. Is there a disease known as tubercular pleurisy ?—There is.

455. And was that what was the matter with this left lung ?—Yes.

456. But with regard to the lining of the costal pleura and the pleural surface of the diaphragm, that you would describe as tuberculosis ?—Yes.

457. And acute tuberculosis ?—Yes.

458. Am I right in saying that the costal pleura is the lining of the ribs ?—Yes.

459. Then what do you call the pulmonic pleura ?—The visceral pleura.

459-1. That is the lining of the lungs proper ?—It is.

460. *Sheriff Berry*.—These were affected with tuberculosis?—May 28,
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460-1. *Mr. Comrie Thomson*.—Was the substance of the left lung congested?—There was some congestion of the substance of the left lung, and on the posterior border of it were nodules perceptible to the touch.Dr. J. B.
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461. On the 15th of May, did you remove a portion of that lung containing these nodules, and deliver it to Dr. Coats for microscopical examination?—I did.

461-1. In your opinion, was this bullock at the time of its death suffering from disease?—It was.

462. What was the disease?—Acute tuberculosis.

463. Was this carcase in your judgment fit for human food?—It was unfit for human food.

464. At the same time and place, did you inspect the carcase of a cow said to belong to Charles Moore?—I did.

465. And did you find that it also was to some extent in a morbid condition?—I did.

466. Will you describe what you saw?—The walls of the chest on both sides presented vegetations having the character of tuberculosis of a chronic type. These vegetations were most advanced on the left side also.

467. But they were seen on the chest walls on both sides?—On both sides.

468. You used the word vegetations; kindly explain why you used that word?—They were fleshy projections from the natural tissue of the pleura, caused by the irritative action of the tubercular bacillus.

469. In the first place, what is a bacillus?—It is a small vegetable creature.

470. A small vegetable fungus?—A fungus.

471. Called bacillus, I suppose, because it has the shape of a little staff or rod?—That is so.

472. Was it the subject of discovery by a scientific man some years ago?—Yes, by Koch.

473. In what year was that?—In the year 1881.

474. *Sheriff Berry*.—Do you mean tubercular bacillus or bacilli of any kind?—Tubercular bacillus was discovered by Koch in 1881.

475. *Mr. Comrie Thomson*.—It is only observable under a powerful microscope?—Yes.

476. And I believe it propagates both by fission of itself and by spores?—Yes.

477. If you cut it in bits every bit is a small source of mischief, and it propagates by spores, I suppose?—Yes.

478. These spores are also visible under a strong microscope?—It is very doubtful. You can see them as long as they are in the parent cell, but when they get dissociated from the parent cell they become practically invisible. You can only discover their existence by their effects.

479. Now, before going further into the scientific aspect of the case, did you find in the posterior portions of both lungs a

May 28, 1889. considerable amount of tubercular deposit?—Yes; it was packed with tubercular deposit, and that deposit was in the softening stage.

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480. What is the earlier stage?—The first appearance is a greyish deposit in the normal tissue, and then it caseates, becomes cheesy, and sometimes cretifies, becomes chalky, and sometimes passes into the condition of pus. In this animal the deposit was assuming a purulent degeneration.

481. Then that was a somewhat advanced stage?—A particularly obnoxious stage.

482. In your opinion, was that cow suffering from tuberculosis, and was its carcase unfit for human food?—It was suffering from tuberculosis, and its carcase was unfit for human food.

483. On the 9th, did you give Mr. Fyfe certificates regarding both these carcasses that they were tubercular and unfit for human food?—I did.

484. I show you No. 3 of process; is that it?—Yes. This applies to both bullock and cow, and it is mine.

485. I show you two certificates. Are these two separate certificates which were subsequently got?—Yes. They are separate certificates to the same effect, applying to the several animals separately.

485-1. Now, is tuberculosis a disease to which human beings are subject?—It is. Its ravages in human beings are very extensive and serious.

486. Is it a disease of a very serious nature?—It is one of the gravest diseases to which human beings are subject.

487. It assumes varieties of form?—It assumes a great variety of form, and attacks a great variety of organs, and of course, according to the derangement of these organs and the function of the organs, it produces very various symptoms of the nature of disease.

488. And its consequences are sometimes fatal, and are always seriously injurious to whatever organ is affected?—That is so.

489. Now, in the Government nomenclature of diseases for the guidance of medical practitioners, are there forms of disease which originate in tubercular processes to be found in almost every organ of the body?—That is so. There seems not an organ or structure of the body in which this tubercle may not establish morbid processes, and from which diseases result, and these diseases are provided for in the nomenclature issued by Government.

490. Do the symptoms of the disease vary according to the functions of the organ attacked?—That is so. It produces derangement of function, and that is the only evidence of disease.

491. And the symptom, of course, varies according to the organ?—That is so.

492. Now, in the classification of causes of death that some of us are familiar with, published by the Registrar General, I find, under the classification of constitutional diseases, the following recognised as originating in tubercle, viz., tabes mesenterica?—Yes, that is a process of wasting arising from the implication of

the mesenteric glands, which takes as its headquarters the functions of the nutrition of the human body.

493. It is more the digestive and nutritive organs that are attacked by that?—Yes.

494. Then there is tubercular meningitis or hydrocephalus?—Yes, which is popularly known as water in the head.

495. There is also phthisis?—Yes; that is chiefly associated with tubercle in the popular mind.

496. That is consumption?—Yes.

497. And that includes what we are accustomed to call scrofula and scrofulous diseases?—Scrofula is well ascertained to be a form of tubercle, in all its manifestations.

498. What per cent. of the deaths registered in this city is contributed by these four tubercular diseases that you have specified?—17 to 18 per cent.

499. That is the four categories of *tabes mesenterica*, water in the head, phthisis, and various forms of scrofula?—Yes.

500. But does that, in your opinion, comprise all the loss of life or disease or mischief attributable to tubercular processes?

500-1. *Mr. McKechnie*.—Is that a proper question—loss of life, or disease, or mischief? You had better take them separately.

501. *Mr. Comrie Thomson*.—I will take the general expression, mischief.

502. *Mr. McKechnie*.—There is another objection also; you should put the question to him, what does that represent?

503. *Mr. Comrie Thomson*.—I have left that point, and I am at another point now. (To witness) Does what you have stated comprise all the mischief that is done to the human race by tuberculosis?—No.

504. What other functions and organs are attacked besides those you have mentioned?—As I said, from the habit of this tubercular bacillus of lighting upon certain organs, it may produce very various symptoms which cannot be traced to their origination in this deposit of tubercle, unless in the case of death, and subsequent *post mortem* examination; but there is no doubt that various forms of nervous disease, even amounting to insanity, arise from this tubercular process in the nervous system, and similarly with other diseases, the symptoms of which are derangement of function in the various organs.

505. Cerebral disease and diseases of the paralytic class?—Yes.

506. Is it also the case that such things as tumours, and diseases of the bones and joints, are to be attributed to tuberculosis?—A very large part of surgical work consists in the excision of tubercular deposits, and the resulting injuries to accessible tissues by the knife of the surgeon in joints and glands that are exposed to operation or otherwise.

507. Has it also been recently ascertained that certain forms of distressing skin affection, that class called lupus, is also tubercular in its origin?—Lupus is a form of skin disease leading to great disfigurement, and that is one of the latest discoveries, that the tubercular bacillus is at the root of that mischief also.

508. So that your evidence upon this point comes to this,

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that it is impossible, from mere statistics of death arising by general recognition from tubercular origin, to estimate the total amount of loss of human life that arises from it?—That is so, and, short of loss of human life, the vast amount of loss of health and loss of limb that is distinctly traceable to this tubercular virus.

509. Now, that being so, is it your opinion, as the officer of health, that where there is reasonable risk of propagating this disease among human beings, it ought to be prevented?—I think that the consequences to human beings are so grave from any possible propagation of tuberculosis, that no reasonable risk ought to be run of encouraging or extending the propagation of the disease.

510. Has the disease also the quality of being hereditary?—That gives very great importance to the desirability of preventing any individual case, because the disease is hereditary, and it is communicable—that is to say, it may spread from that individual vertically or laterally.

511. *Sheriff Berry*.—How does it spread? what do you mean by that?—By heredity.

512. But you said it was communicable; what do you mean by that?—In the case of phthisis, for instance, the expectoration in drying spreads as dust.

513. *Mr. Comrie Thomson*.—And the breath, I presume, of a consumptive person is dangerous?—That is not so dangerous as the general distribution of expectoration when it is dry, and the spores, which are immortal, one might say, being spread abroad.

514. Now, did the discovery of the bacillus in 1881, which you have mentioned, at once extend the scope of preventive measures in the opinion of both veterinary and medical experts?—That is so.

515. That was a new era?—A new era in the practical aspects which such men took of tuberculosis, and since that day there have been constant discussions going on upon the question which is before the Court at the present moment.

516. May I take it that it was proved, and is at this moment the opinion of the profession, that this minute organism called the tubercular bacillus is the cause of tuberculosis?—That is universally admitted by experts.

517. Has it a distinct individuality—a characteristic appearance of its own?—It has, and it is quite as distinct as any of the visible members of the vegetable kingdom are one from the other.

518. And does it seem to thrive under certain conditions, and in certain portions of the human organism by choice, some being more congenial to it than others?—That is so. It has got its habitats inside the human body, and its conditions of life there, just as the visible vegetables have outside the human body.

519. Now, is it the fact that the bacillus tuberculosis flourishes both in human beings and in the lower animals?—It flourishes in both.

520. What do you deduce from that as to its existence?—I say that it is quite as reasonable, as an inference from the fact that

this identical bacillus flourishes in man and in animals, that in the maintenance of their pedigree they are connected, as that when one finds visible vegetable organisms in neighbouring fields they are probably associated in the maintenance of their pedigree.

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521. In your opinion, does the fact that animal food is consumed by the human race open an easy path for the bacillus to come from the animal to the human being?—

522. *Mr. Jameson.*—I think that is a most improper question to put.

523. *Mr. Comrie Thomson.*—What is the objection?

524. *Mr. Jameson.*—I think the witness should be asked what connection he thinks there is between the propagation of the bacillus in the human being and in animals, and not that the statement should be put in that way into his mouth.

525. *Mr. Comrie Thomson.*—I am quite willing to put it so. (To witness) What connection do you conceive exists between the lower animals and human beings with regard to the propagation of the bacillus tuberculosis?—The use of the lower animals and their products for human food has given abundant opportunity for the passage of the bacillus across from the lower animals to man.

526. Of course, the reverse, the communication as from man to the lower animals, must be of very infrequent occurrence?—It is casual. It exists, but the opportunity for it is casual, and may be called accidental altogether.

527. There is a disease known, I think, which is common to man and to some quadrupeds?—Yes, a skin disease, favus, which has been recognized in man and the mouse and the cat.

528. It is the same organism?—The same vegetable organism is the cause of the disease in each of these animals.

529. Have these inferences that you deduce from general biological law been proved by experiment with regard to the transmission of bacillus tuberculosis from the lower animals to man?—

530. *Mr. McKechnie.*—Do you mean by the witness's own experiments?

531. *Mr. Comrie Thomson.*—No, by experiments known in the profession.

532. *Mr. McKechnie.*—I doubt the admissibility of this evidence. This witness has not even said he is an experimentalist. He says he is an officer of health. That is all, and how can he prove what has been established in the profession?

533. *Mr. Comrie Thomson.*—I am certainly going to call experts; I am not going to rely upon Dr. Russell as an expert; he does not set up for being more than he is; but it is perfectly competent to ask a person in the position of the witness what is at the present moment the consensus of medical opinion, and that is all I propose to ask him.

534. *Mr. McKechnie.*—You may ask him, is the profession universally agreed upon this point?

535. *Mr. Comrie Thomson.*—No, because the profession is universally agreed upon nothing in this world.

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536. *Sheriff Berry*.—You can ask him what his opinion is as to the general prevailing opinion of the profession.

537. *Mr. Comrie Thomson*.—That is scarcely the question I was proposing to put. It was this, whether the inferences from general biological laws have been proved by experiment and observation to be correct in the case of the tubercular bacillus?—Yes.

538. You know that as a medical fact?—That is the result of my reading.

539. Now, have you made the progress of scientific inquiry into this matter which has been carried on since Koch's discovery the subject of your very careful consideration?—I have, to the best of my ability.

540. Have you made yourself familiar with the literature of the subject?—Yes.

541. And what is the result of your consideration?—The literature which I have specially studied is that of the Departmental Committee.

542. I am coming to that in a moment. I asked you, what is the result of your consideration; what opinion have you formed as to the use of the flesh of a tuberculosed animal?—That it is in all cases attended with such an amount of risk that it is wrong to submit human beings to that risk, so that my opinion is that the flesh of all tuberculosed animals ought to be condemned.

543. That is, the whole flesh?—The whole flesh.

544. Now, there was a Departmental Committee of the Privy Council which sat last year?—Yes.

545. I hold in my hand the blue book, and I may take it from you that all the leading experts, or nearly all the leading experts, in the kingdom were examined before that committee?—That is so.

546. The date of the report is 10th July, 1888. Was the object of that commission mainly to deal with tuberculosis in man and in animals; pleuro-pneumonia and tuberculosis were the two subjects submitted to them?—Yes, I believe so.

547. Now, I want to ask you if you agree with this statement in the report of the committee, pars. 43 to 46, p. 22:—

“The distribution of the disease and the bacilli in the body closely affects the question of the use of tubercular meat as food.”

“It appears that the marrow of the bones is affected at an early period, and that the bacilli may be present therein in considerable quantity before they discover themselves by changes obvious to the eye.”

“Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.”

“Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances either

“for man or the lower animals.” Do you concur in that opinion? —I do; that last sentence especially exactly represents my position.

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547-1. I also refer you to p. 21 of the report, par. 21, in which it is said:—“The bacillus tuberculosis has been proved to enter the body, and to kill the animal by causing the growth of tubercles, in the following ways:—

“(1) Inhalation—into the air passages and lungs.

“(2) Swallowing—into the alimentary or digestive system.

“(3) Direct introduction—into the sub-cutaneous or sub-mucous tissue by means of a scratch or cut or sore in the skin or mucous membrane.

“It is also supposed to be directly transmitted by—

“(4) Heredity.” Do you agree with that?—Yes.

548. And the subsequent detailed amplification of these headings, which I need not occupy time in reading, but which you have perused?—Yes.

549. Under the heading on p. 22, par. 35-37, it is said—“The disease, as already referred to, may attack the body of an animal in two different ways. It may, for instance, be introduced into the blood, and be distributed generally over the body, spreading so rapidly as to make its entry difficult of discovery, and to gain for it under this condition the name of acute or general or miliary tuberculosis. On the other hand, it may, as already stated, affect for a considerable time only the point of entry and neighbouring lymphatic glands, becoming subsequently distributed over the body from these latter. This is called in the first instance local tuberculosis.” That also meets with your approval, does it?—Yes.

550. Now, would you kindly explain in simple language, which I am sure you can command, what your view is of the progress of one of these microbes: a microbe is a generic name for a thing like a bacillus. It means a little living object, does it not?—Yes.

551. Well, this bacillus, if it gets into the system, is it supposed that its working may be quite invisible for some time?—Certainly, necessarily so.

552. And does it seem to go—I was very nearly using a scriptural quotation—it goes about seeking a congenial soil?—Yes.

553. And then when it finds that, it settles down, and then you would have probably gradually formed a tubercle?—It settles down in this congenial soil, and proceeds to propagate and pursue its life, and by the irritation consequent upon the products of its life, to produce these miliary nodules.

554. Then, during that progress, while it is enjoying itself there, is it supposed to be throwing off spores or other bacilli?—That is so; and, of course, the products of its life are noxious, just as the products of our own life are,—that is to say, that there are offensive alkaloids and irritant matters that are sent off into the circulation from the development of these creatures.

555. Then, is it apt to be taken up by the lymphatics?—It has a great liking for the lymphatics as a path for propagation.

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556. Tell his Lordship what the lymphatics are.—They are a system of vessels with associated glands, very, very minute.

557. They are absorbents?—They act as absorbents.

558. And they are all over the body?—They are all over the body.

559. But specially formed into glandular knots at the neck and under the arm pit and in the groin, I think?—Yes, and in the neighbourhood of the viscera. They are connected with the nutritive functions, and the products are ultimately landed in the circulation.

560. So that if you have got a tubercular bacillus in the body, and he begins his life there, he is propagating the mischief every moment, I presume, and this is done by the constant absorption of him by the lymphatics?—That is so.

561. And is it partly upon that belief that you base your opinion that, once the tubercular virus is in the system of an animal, there is every probability that the whole of it may be injurious to the consumer?—That is so, wherever it assumes or produces a local change sufficient to be detected by the naked eye. In the first place, that local change begins in microscopic changes which cannot be detected by the naked eye; and in the next place, it may be anywhere throughout the system where the appropriate soil is got.

562. Am I right in supposing that during these years since 1881, only eight years after all, there has been a gradual progress in medical opinion in this matter?—That is so. I don't know any practical question, that is to say, any question relating to the bearing of scientific discovery in the abstract upon practical procedure, which has caused more discussion. It has been discussed every year before congresses of all kinds of medical men, and by veterinary surgeons.

563. And I suppose that this result has been arrived at not without reluctance, because it, of course, involves the destruction of what was hitherto supposed to be good food?—I have read these discussions—as many of them as came in my way—and it is quite obvious that the economic considerations which were associated with it bulked very largely, and were taken into account in the consideration of the question.

564. But in your opinion, and I think you know it to be the opinion of many other eminent men who have made this the subject of their study, it is thought that the considerations of public health override the economic considerations involved in the destruction of tubercular animal food?—That is so. The risks are so great, and the interests of man so much involved in any risk that he can properly take, that the conclusion come to is as stated in this departmental report, and that is the general conclusion of such discussions.

565. That view has been taken for some time in Greenock and in Paisley, and acted upon there?—I believe so.

566. And in Edinburgh?—I believe so.

567. I suppose one need not put it higher than this, that there is so great a probability that the whole of a tubercular animal is

affected that it is right that the public should have the benefit of the doubt by being protected?—That is my opinion, and it has evidently been the opinion of this departmental commission, and of the recent Veterinary Congress in Paris.

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568. I am just going to ask you about that. Was there held last summer a Congress in Paris pour l'Etude de la Tuberculose?—Yes.

569. It sat from 25th to 31st July, 1888, and this very question we are now considering was made the subject of anxious consideration?—That is so. It was specially called for the consideration of all questions connected with this vast subject of tuberculosis, and this was the forefront of it.

570. I see M. Chauveau was elected president—he is a man whose name is well known in the scientific world?—Yes. His contributions to the knowledge not only of the diseases of the lower animals, but by reflection and by direct experiment of the diseases of man are very well known, and very important.

571. I want to ask you if you agree with this:—“ M. Chauveau
“ went on to refer to tuberculosis of the lower animals, tracing
“ the various steps by which the identity of human and bovine
“ tuberculosis had been established. Of this identity, he said,
“ there did not now remain a doubt, and it was necessary to
“ reckon with the fact, and with all the consequences that it
“ entailed. There was but a single malady, a single virus, attach-
“ ing itself to the human and to the bovine species, and capable
“ of passing from the one to the other. They were therefore
“ compelled to admit that the milk and the flesh of the latter
“ species might be a source of danger to man. When that
“ opinion was first pronounced before the Academy of Medicine
“ on the 17th November, 1868, there was a great outcry against
“ the imprudent individual who, on the strength of laboratory
“ experiments, dared to sow such alarming views. But things
“ had changed since then. The opinion had made progress, and
“ now throughout the civilised world the authorities were seek-
“ ing to devise measures to prevent the propagation of tubercul-
“ osis by means of the flesh and milk of tubercular animals.”
That represents the progress of opinion on the matter?—Yes.

572. Of course, it would be improper to allow the Court to have the impression that there were no expressions to the contrary effect by some of the gentlemen who attended the congress; do you remember the result of the discussion?—The opposite side in that discussion to that which I occupy was extremely well and ably represented, but the result of the discussion nevertheless was the passage of a motion with only three dissentients.

572-1. Out of how many?—The congress was attended by over 80 individuals, but you will have evidence of a direct sort about that.

573. *Sheriff Berry*.—Do you know exactly what the division was?—I can point out the passage in the original report.

574. *Mr. Comrie Thomson*.—I read to you the resolutions passed at that congress:—“ 1. There ought to be placed in the
“ attributions of the hygienic councils all the questions relating

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 Dr. J. B. Russell. "to the contagious diseases of the domesticated animals, comprising all such diseases which do not at present seem transmissible to man. To vaccinia, glanders, rabies, anthrax, tuberculosis, there might indeed be added later other common infectious diseases requiring equally a common protection. 2. Every possible means should be adopted, comprising compensation to parties interested, for the general application of the principle of seizure and general destruction in totality of all flesh belonging to tuberculous animals, no matter how slight the specific lesions found in such animals." Now, that is just the view you have adopted?—Yes, that is a correct translation of the motion as recorded in the original report.

575. Are you aware that under a decree of 28th July, 1888, the French Government added tuberculosis to the list of contagious maladies to be dealt with under their Act of 1881, and passed certain regulations with regard to it?—I believe that is so.

576. I will read them to you:—"1. When tuberculosis is recognised in bovine animals the Prefect shall make an order placing these animals under the surveillance of a veterinary inspector. 2. Every animal recognised tubercular shall be isolated and sequestered. The animal shall not be removed except for slaughter. The slaughter shall be carried out under the surveillance of a veterinary inspector, who shall make the autopsy of the animal, and send to the Prefect the report of the same within the five days following the slaughter. 3. The flesh of tuberculous animals shall be excluded from consumption: (1) if the lesions are generalised, that is to say, not confined exclusively to the visceral organs and their lymphatic glands; (2) if the lesions, although localised, have invaded the greater part of an organ, or are manifested by an eruption on the walls of the chest, or of the abdominal cavity. Such flesh excluded from consumption, and also the tuberculous viscera, shall not be used as food for animals, and ought to be destroyed. 4. The utilisation of the skin shall not be permitted except after disinfection?"—That is so.

577. So that, as I said before, there has been a gradually accumulating mass of evidence, and the scientific opinion on this branch of hygiene has been advancing?—Yes.

578. And you, on your responsibility as the medical officer of this city, concur in that opinion?—I do.

579. I should like you to tell us at this point why is it that you think that the whole animal ought to be condemned, although there are only visible local signs of disease?—Because behind these visible local signs of disease there is a constitutional infection.

580. And what are the limits of it?—Of course, wherever the blood circulates you may have this virus.

581. Are you of opinion that the blood, from moment to moment, may be carrying this virus through the whole vascular system?—That is so.

582. And that even although the naked eye cannot detect it?—It is quite impossible to determine by the naked eye what is the

condition of the flesh of an animal as to consumption unless you have made up your mind as to the nature of the disease. May 28, 1889.

583. But when you get a systemic disease—that is, a disease, I understand, that affects the system—then the whole structure of the animal probably is injuriously affected?—That is so. Dr. J. B. Russell.

584. And capable of injuriously affecting the consumer?—That is so, quite independent of its physical appearances to the naked eye, in virtue of the probable presence of a subtle virus.

585. I suppose even a minute anatomical and even histological examination might not disclose it?—It is quite possible; the spores are invisible.

586. There was some reference made a little ago to the mischief perhaps being cured by heat. In the first place, take the familiar joint, according to our modes of cooking are there not portions always of the joint which are not so exposed to heat as to ensure the destruction of microbes?—It is very rare that one sees a joint on the table in which there is not a red portion, in order to supply the varied tastes of the people who are to partake.

587. Underdone meat?—Underdone meat; and whenever you have blood in meat you have got a portion which has not even been exposed to a temperature which will coagulate albumen, much less destroy a microbe.

588. Then, is it understood that the spores do not expire, although they are warmed up pretty well?—Really, the recorded experiences of spores are such that one would not reckon that any known process would without fail deprive them of vitality. There is no known process which is absolutely certain to effect that. They are peculiar in all their relations, even to the strongest disinfectants.

589. *Sheriff Berry*.—Does exposure to boiling point not destroy vitality?—The probability is that it would, if continued for a sufficient time; but still, from what I have read and what I know, I would be very doubtful of staking my health upon the probability that these things were devitalised.

590. *Mr. Comrie Thomson*.—Are you aware that experiments of great variety have been made upon animals with tubercular material derived from other animals and from human beings, showing that in the modes that we have been mentioning, by inoculation, and by inhalation, and so on, tubercular disease may be conveyed from one animal to another?—I have read of almost every conceivable variety of experiment.

591. And that is established in your opinion?—That is established.

592. Of course, you could not very well have the experiments on man; but are you aware that there have been involuntary experiments made by accidental inoculation?—It is on record that butchers in the necessary professional manipulation of infected carcasses have, by accidental scratches and cuts, inoculated themselves with tubercle, and produced what is called butchers' tubercle, in which the bacillus has been recognised.

593. There was another point that was adverted to, I think, in

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part of the evidence I read to you before the Commission—Has recent observation shown that the marrow of the bones may be infected at the very outset, or, at least, before any distinct local manifestations exhibit themselves?—That is so. Before there is any pleural affection, or anything visible at all to the naked eye, it has been found that the marrow of the bones has been infected and become the headquarters of the bacillus.

594. What does that suggest to you?—It shows the deep-seated, penetrating character of this virus, so that, when you are sure that it is present in an animal, you cannot certify that it is not actively present in any part of it.

595. Could you certify that without a careful dissection of the whole thing?—By a careful dissection of the carcase we might probably ascertain all that was visible to the naked eye.

596. But you could not, without that, ascertain even what was visible to the naked eye, and apparently there might be communicable mischief which would not be visible in any part of it to the naked eye?—That is quite certain, in my opinion.

597. So that the system which has hitherto prevailed in this city of being content to remove the parts actually affected left you still to reckon with the fact that tissue does not become infected except when it has undergone changes which are visible to the eye?—Well, it assumed that there were no changes and no lesions whatever but those that were external and were visible to the naked eye.

598. Which is an incorrect assumption?—Totally.

599. And, in your opinion, an assumption dangerous to the public health?—Wholly.

600. Can you discover, having the advantage of the latest light on the subject, any scientific basis on which to rest the opinion that any portion of these tubercular carcasses can be safely used for human food?—None whatever.

601. And therefore you feel yourself driven, even although the conclusion is attended with economic disadvantages, to condemn the whole carcase?—I do.

602. And it was proceeding upon these views that you condemned the cow and the bullock in question in the present case?—That is so.

603. Coming back to a smaller matter, I daresay you heard the statement made by Inspector M'Lellan and his assistant, Beresford as to two sides of beef that were submitted to you last month?—Yes.

604. Do you remember the circumstance?—I remember it perfectly well.

605. Explain what happened.—The two sides of an animal were presented for inspection to myself and Dr. M'Call and Dr. Young, which had been carefully deprived of all internal parts in the way that we have been discussing, and, so far as my skill led me to believe, it had been suffering from some disease or other which probably was tuberculosis, but we got no statement from the officer whatever as to those facts which he stated, and as for myself I may say that I do not at all present myself as a person

who is skilled in the detection of those minute naked-eye appearances which to practical butchers are perfectly obvious. I shall be very thankful to receive, even from a constable or any other body, such indications as his knowledge will permit him to give as to those appearances to which he referred as having still been left upon the surface of the carcase.

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606. But did he call your attention to that?—No.

607. Or make any statement to guide your judgment?—None.

608. *Sheriff Berry*.—Were you asked to examine these carcasses as to whether there was tuberculosis?—There was no reference to tuberculosis made. They were presented to us as carcasses that had been detained as being suspicious.

609. You did not know on what ground?—I did not know anything about it, except that they presented some appearances which were suspicious.

610. And so far as you could judge, there was nothing of the kind?—I was perfectly certain that some disease did exist from the fact that the pleura and the peritoneum had been stripped off those carcasses, which was contrary to the usual practice of a butcher when he has a healthy carcase to deal with.

Cross-examined by *Mr. Jameson*.

611. You have used the term “virus” repeatedly in your examination; virus is a poisonous juice, is it not? What do you mean by that as applying to the bacillus of tuberculosis?—It means an animal poison in its larger sense.

612. Such as the poison of a snake?—Yes. That would be virus.

613. But not the injection into the body of another organism?—In my profession that is the habitual usage of the word.

614. Let us understand what you mean by virus; do you mean the spores of a bacillus or the bacillus, or both?—Both, and also the vital products of a bacillus—the alkaloids which it produces.

615. You take virus to mean all those three things?—Yes.

616. But the products of a bacillus could not in themselves produce more mischief than local irritation, whereas the spores or a bacillus itself may go on to spread?—The products of these bacilli have also the power of propagating the disease.

617. How do they do that?—That is one of the interesting observations made on the lives of these creatures—that the products of their life produce a modified form of the disease, which has been used for inoculation purposes in many instances.

618. But those products are not living things themselves?—No; they are animal alkaloids.

619. Is not by far the commonest mode of the introduction of this tubercular bacillus into the human subject or other animals by inhalation?—I don't think so.

620. What do you think is the common way?—Into our bodies by ingestion.

621. Has there been a case proved of a person taking tuberculosis by ingestion into the human subject?—No.

622. Then, why do you give the answer you have given?—By

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 Dr. J. B. Russell. the same analogy that you are compelled to resort to for the evidence of a very large amount of our physiological knowledge, by the analogy of experiments.

623. Analogy of experiments upon other animals?—Yes.

624. But in these experiments on other animals is not ingested food always put in in a raw state? Is it not merely by tuberculous sputum and other substances of that kind?—I think every kind of substance in the shape of tissue or excretion has been used for that purpose.

625. And given in the state in which it was taken from the tuberculous animal?—Yes, some experiments have been made with different temperatures to ascertain the effect.

626. And only the pieces which were visibly affected by tuberculosis were used for these experiments?—It presented no visible traces of disease.

627. No microscopical trace?—No microscopical trace in the shape of juice.

628. By whom was this done?—There are records of it in the discussion before the Congress at Paris.

629. Do they find that alone produces tuberculosis?—Yes.

630. Who was the person who made this particular experiment?—You will find it on p. 63, by Professor Arloing. He used tubercular juice that had been heated up to 198° Fahr. for half an hour, and yet the result was to infect one animal out of six.

631. Is not tubercular juice juice out of a tubercle?—I suppose it is in this case.

632. You would expect that, and so would I?—Yes.

633. You said you had got the ordinary flesh juice from the clean part of an animal affected with tuberculosis, and that that had produced tuberculosis in another animal—is there any case of that kind?—The juice of muscular tissue which to the naked eye was healthy has again and again been used and produced infection.

634. By whom?—Galtier, on p. 78.

635. He does it by inoculation?—Yes.

636. But I am talking of ingestion by way of the alimentary canal?—That is a very different thing.

637. You have not given any instance of that?—No.

638. And you cannot?—I misapprehended your question. Those experiments which I have referred to prove incontestably that, in apparently healthy flesh, this virus exists, and to inject the juice was a much more trying experiment than to eat it because more cases would have failed, but still it proves that the virus was there.

639. But you cannot tell us how those juices or pieces of flesh were selected or anything about these experiments more than you have read?—That is all.

640. Can you give us a case where an experiment proved that the clean flesh from a tuberculous animal, an animal locally affected with tuberculosis, induced tuberculosis in the animal that ate that flesh?—I believe there are instances, but I cannot give them at this moment, or from my notes.

641. You cannot give any such?—It is very difficult to epitomise. May 28,
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642. It is a subject which is in its infancy, scientifically speaking?—I can hardly admit that. It is in its infancy in the practical application in the cases before us. Dr. J. B.
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643. Many people make experiments with germs?—Yes.

644. And one eminent Frenchman thought he could get germs without any antecedent life?—It is a very old question,—biogenesis, or abiogenesis.

645. Did he not think that he had discovered abiogenesis?—Yes.

646. And was it not substantially contradicted by M. Pasteur?—Yes.

647. Very recently?—No. It was some time before people understood spores.

648. About the cholera bacillus, did not Koch think he discovered that?—Koch discovered the comma bacillus. There is considerable contention about the validity of his discovery.

649. Is it not the general opinion that there is no such bacillus?—I cannot say that it is.

650. There is a very large amount of opinion in regard to that?—There is some opinion to that effect.

651. You cannot say how much?—The opportunity of observing cholera is but rare, and it will be some time before it is settled.

652. Does it not come to this that there is a very divided state of opinion upon the science applicable to microbes?—There is no division of opinion on this special question before us.

653. You think not?—No.

654. We will see about that in the course of this trial. Now, about the usual way of communication of the disease, it is in the lungs of both man and animals that this disease of tuberculosis generally makes its first appearance?—Very commonly.

655. Is not the inference, not from analogy, but by direct reasoning that these bacilli have got into the lungs by the breath or inhalation?—It is quite a reasonable inference.

656. And is not the common and most frequent form of tuberculosis of the lungs both in man and the lower animals?—As regards man, and as regards the indications afforded by death, certainly phthisis is the most serious ingredient. It is 12 per cent. out of the 17 per cent.

657. But how many out of the 17 per cent. in the human subject is there of tuberculosis of the alimentary canal?—I cannot say that.

658. The bowels, stomach, or any other part of the alimentary canal?—I cannot say, but if 12 per cent. out of a death-rate of 17 per cent. is absorbed by phthisis, it leaves a very small margin for the others. The total death-rate contributed is 17 per cent., and of that 12 per cent. is by phthisis, so that necessarily there is 5 per cent. only for the other three forms.

659. Can you say that there is one per cent. of death by tuberculosis in the alimentary canal?—No.

660. Have you seen a single case in Glasgow distinctly attri-

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 Dr. J. B. Russell. butable to tuberculosis of the alimentary canal alone?—That is frequently seen. Of course, I apprehend that you are speaking with some relation to tabes mesenterica and tubercular peritonitis.

661. I am taking the alimentary canal itself; have you seen tuberculosis in the alimentary canal, the stomach, or intestines?—I have not, but you will have pathologists who will give you careful information.

662. Does not that show that the communication of tuberculosis by eating tubercular flesh is almost infinitesimal?—I cannot admit the validity of that reasoning in view of this fact that the experiments show that those inoculation experiments act in other ways.

663. Don't talk of inoculation; that is a very different thing from ingestion by way of the mouth?—I wish to point out to the Court that, however the virus may be introduced, it is a characteristic of it that it may go to the lungs.

664. *Sheriff Berry*.—It may not develop itself in the canal by which it may have been introduced?—It does not confine itself there, and may wander about the body.

665. *Mr. Jameson*.—And you would rather take these analogies than take the plain common sense way by which it gets to the lungs by way of the mouth?—I prefer to base it upon direct experiment.

666. If tuberculosis came through the stomach, it must begin in some way in the alimentary canal, must it not?—Not necessarily; it must enter the system.

667. And make a home for itself before it pervades the system. Take the progress of one bacillus getting into the alimentary canal, must that bacillus, if he has to get elsewhere, lodge himself in the alimentary canal, and propagate himself there?—Not necessarily propagate himself at all. He certainly gains access by the path that is first open to him.

668. Would you expect that in those cases tuberculosis would first appear in the stomach or other portions of the alimentary canal?—There are many things to regulate it. If it happened to be a weak stomach it would be exactly the place where it would fasten upon, as it does upon a weak place.

669. But if it is a strong stomach it will throw it off?—It has to run the gauntlet of digestion, and certainly it has a hard time of it.

670. And that proves that if the tuberculosis is caused by eating tubercular meat, it must be, according to the experience of the country and town, almost infinitesimal?—It is admittedly the most difficult path which the tubercular bacillus can have.

671. So difficult that you cannot say that one per cent. of the deaths by tuberculosis is caused by entry by the mouth and stomach?—Apart from any evidence of the fact, I am not prepared to say that there is even one per cent. caused by that.

672. We have now got that it is at all events a very possible way of the bacillus getting entry to the body to get in through the lungs?—Yes.

673. And if an animal has its lungs in a weak state, or if the bacillus is a very active one, he will fasten upon the lungs?—Very likely.

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674. If it stops there, and there is no emaciation of the body generally, and the other natural functions go on all right, would you call that local tuberculosis?—I cannot admit any such thing as local tuberculosis whatever in the lungs, which are the head quarters of the circulation, in reference to a virus which spreads through the system.

675. We may drop the word "virus," and use the word "bacilli"; is not the distinction between local and general tuberculosis one that is taken in this report which we have heard about to-day?—Yes. There it is local in its manifestation, and general in its manifestation.

676. There is no such qualification—just listen to this—"It may, for instance, be introduced into the blood, and be distributed generally over the body, spreading so rapidly as to make its entry difficult of discovery, and to gain for it under this condition the name of acute or general or miliary tuberculosis. On the other hand, it may, as already stated, affect for a considerable time only the point of entry, and the neighbouring lymphatic glands, becoming subsequently distributed over the body from these latter. This is, in the first instance, local tuberculosis." Do you agree with that?—With the explanation that even in that paragraph, it is quite intended that "local" refers to the visible anatomical changes, and does not infer that the virus is not circulating everywhere.

677. But if it appears nowhere else, it is purely a hypothesis on your part that it may be elsewhere?—I am speaking of the virus or tubercular bacillus.

678. If it only shows its presence in the lungs and nowhere else, is not the inference from that that the other parts are healthy?—Healthy as far as that is concerned, but distinctly unwholesome, so far as the point at issue is concerned.

679. If they become unwholesome, they become so by the bacilli or spores spreading through the system?—Yes.

680. As soon as that happens, is there a case no longer of local but of miliary tuberculosis?—Not necessarily. All the time that this obvious so-called lesion exists, distribution of the virus is taking place through the whole system, and the virus would work up to the level of miliary affection if the human being survives.

681. You say not necessarily, but probably; is it that there is no disturbance where the bacillus is showing its presence by disturbance of local tuberculosis on the one hand, and on the other there is the manifestation through the whole system that the animal is affected, and up to that time there is only local tuberculosis?—We are getting a little muddled.

682. Is not that probable, that where you have simply organs like the lung of an animal to all appearance healthy, it is probable that the lung is the only place where there is the bacillus of tuberculosis?—In my opinion, it is highly improbable, and I would

May 28, 1889. almost say it is quite certain that the bacillus is flying round the organism, ready to deposit itself and begin its course of life wherever it may get the chance, although it has only, so far as my observation can tell, up to the moment of observation established itself in the lung.

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683. Where was it flying in—in the blood?—Yes.

684. But the bacillus of tuberculosis does not take up its position in the blood; you said that it was the lymphatic vessels?—Yes; it affects the lymphatics also, and generally speaking the blood also.

685. Do you find it in the blood?—It has been found in the blood.

686. Often?—Not often.

687. Very rarely?—Very rarely.

688. Who found it in the blood?—I fall back upon the resolution of that committee and accept its terms, that it is very rarely found in the blood.

689. You accept the fact that it is very rarely found?—Yes.

690. You must surely withdraw the statement you made that when you find him in the lungs he is flying round the whole system seeking whom he may devour?—There is an antagonism and perpetual fight between those bacilli and the ordinary healthy elements in the body. The bacillus is not left to get all its own way. There are elements in our body which antagonise the bacillus, such as the white corpuscles in the blood because of the function of destroying these bacilli.

691. That would account for the bacilli not being found in the blood?—That accounts for their rarity, so long as a person is healthy.

692. Does it not follow that the bacillus does not go careering through the blood, but that he is confined to the place where he gets an entrance to the lymphatic glands in connection with it?—I don't think so. It gives one a very clear idea of how, in these phagocytes or leucocytes, these bacilli are carried, and behind them are the spores.

693. You never observed them in the blood yourself?—No, I have not.

694. Is your knowledge derived from those books?—My knowledge is derived from careful reading of the literature of the subject.

695. How much literature?—The departmental report and the official report of the Congress.

696. How many people were there from England and Scotland at that Congress?—You will have the opportunity of seeing one of them.

697. A Greenock one?—Yes.

698. Was he the only one—you don't know how many others?—I find in the list Dr. Joseph Coats, professor of pathology in Glasgow.

699. Was he present?—I am not sure.

700. Those are members?—Yes.

701. But that does not mean that they were present?—No, of course it does not.

702. Have you any knowledge of this disease beyond what you have got in the report of this Congress and this departmental report?—None whatever.

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703. Have you read Koch's book?—Yes.

704. His statements also form part of your opinion?—Yes.

705. Has Koch ever said that the whole of the flesh of animals affected by tuberculosis should be destroyed?—I think he has.

706. Where?—I see Mr. M'Kechnie with a book in his hand which I recognise. Our own counsel has it.

707. I shall read you a passage from Koch's essay in this book of selected essays, "The Etiology of Tuberculosis," p. 191. "Another point of importance to remember is that tuberculosis in animals used for food, especially *perlsucht* in cattle, remains more or less localised, so that there would be no danger, except in eating the tubercular lungs, glands, etc." Do you agree with that?—No, I do not.

708. You do not?—I do not.

709. Was not Koch the discoverer of this bacillus?—Yes.

710. And is he not the greatest authority on the subject?—Yes.

711. But you venture to disagree with him there?—I notice that the date of this translation is 1886, and I don't know when the date of that paper was, but that is not Koch's opinion now.

712. Can you show me that it is not?—I cannot give you any reference, but I venture to say that from the progress of things.

713. *Mr. Comrie Thomson.*—We quite admit that the opinion has undergone a change.

714. *Mr. M'Kechnie.*—That you assert; you must prove it.

715. *Mr. Jameson.*—Can you tell me why there should be any change since then—he knew about it perfectly then—its nature and everything about it?—Practically the great body of experiments has been made since then.

716. *Sheriff Berry.*—Since 1886?—I have not ascertained the date of that paper, but 1886 is the translation.

717. Do you mean that since 1881 or 1886 the great bulk of experiments have been made?—Since 1881.

718. *Mr. Jameson.*—And this is published in 1886?—The translation is.

719. I don't suppose medical gentlemen translate books that are superseded?—This was published in 1881.

720. I thought you said 1886?—The translation was published in 1886.

721. The book says, "Volume 2, 1884." Look at p. 65?—There are two essays; the first is 1881, and this one which counsel is quoting from is 1884.

722. That is the date of Koch's writing of the essay, and the date of the translation is 1886?—Yes.

723. Has anything happened since 1884 to make Koch, the discoverer of this interesting creature, change his view upon that subject?—A number of experiments have been made since 1884, and the extent of our knowledge has enormously increased.

724. Do you know any experiment that should affect that

May 28, 1889. opinion of Koch's?—The whole contents of this report of the Congress, I believe, since 1884.

Dr. J. B. Russell. 725. Taking the bullock first, you said that there was inflammation in the pleura?—Yes.

726. Is it possible that inflammation caused by cold or overheating or sudden heating or other congestion of the blood vessels in the membrane of the pleura could co-exist with tuberculosis?—Judging from the analogy of human beings, I would say that it is quite possible that there might be acute pleurisy, and that by lowering the vitality it might induce tuberculosis.

727. And I suppose the converse might happen, that if an animal has a slight attack of tuberculosis, it might, supervening upon that, have an attack of pleurisy?—Yes.

728. Was there anything in the red appearance of these congested surfaces that told you whether the pleurisy was in this case caused by tuberculosis or by some other cause?—That is the bearing of the fact that I stated in my leading examination—that I saw nodules, which Dr. Coats examined.

729. But I am taking the red appearance; you found tuberculosis, but was there anything to show you that the symptoms of pleurisy were attributable to tuberculosis and not to a cold?—I inferred that it was tuberculosis from the presence of these tubercles, but not from any other reason.

730. I think you told us that the inflammatory pleurisy caused by a cold or overheating might co-exist with tuberculosis?—Yes.

731. Apart from these appearances which you described in this bullock, was the flesh of the bullock apparently perfectly sound?—I did not concern myself very much with the flesh; I don't know that my opinion as to the appearance of the flesh is of much value. My interest was to determine whether this animal had tuberculosis.

732. Did you not turn your attention to how far the disease had proceeded?—Nothing further than what I have stated as to its condition.

733. You condemned the carcase simply because you found tuberculosis in one lung?—On the pleura.

734. Did you find tuberculosis on the pleura—I thought it was only inflammation?—I said that the appearances on the pleural side of the diaphragm were characteristic of tuberculosis.

735. Did you find any tubercles?—They had a miliary appearance; they presented miliary tubercles.

736. What do you mean by that?—Like the roe of a fish—simply the physical characteristic of local lesion of the tubercle bacillus. The word tubercle expresses it.

737. A small rash?—It might be called a rash.

738. But that was not the distinctly tubercular appearance?—Yes.

739. Might not such an appearance be produced by local inflammation?—I don't think so. I don't think it could be caused by any local inflammation except what arose from this tubercular bacillus.

740. Had you seen any case of that kind before?—Yes.

741. With exactly the same rash?—I never saw so much—
with so much pleuritic inflammation.

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742. And that inflammation, of course, would render it difficult for you to see what was due to inflammation, and what might be due to the presence of a bacillus?—That is so, and that is why I referred specifically to the characteristic appearance of the portion below the diaphragm, because there it did not appear to be interfered with.

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743. But you are certain that there were tubercular appearances on the lung and the lower part of the diaphragm?—Yes.

744. Have you often passed animals that were worse affected than that?—Never to my knowledge.

745. I think you were in court at the time the two sides of beef were mentioned; did you not see that there were tubercles upon the groin there and adhering to various parts of the sides of the beef?—No, I did not recognise anything of the sort.

746. How do you account for that?—I was in the same position as I would be with a human body if any person had swept away the intestines and submitted it to me as a kind of conundrum; I might be bewildered even there.

747. But you were called on to view these sides of beef in order to see whether, from your knowledge as a medical man, they were fit for human food or not?—I was.

748. Is that the conundrum that you were speaking of?—A medical man depends upon the whole pathological condition of the subject on which he is asked to give an opinion.

749. Is not the best thing that can be shown to you the flesh itself?—The appearance of the flesh, as I have frequently said, was nothing in the face of a disease which may be present, and leave all the naked-eye appearances perfect.

750. But Inspectors M'Lellan and Beresford both saw it?—

751. *Mr. Comrie Thomson.*—They were quite mistaken. If you suggest that anything was shown to this witness, and that there were manifestations of tubercle, then I have to say that that has not been put to any of the inspectors. What they said was that everything of that kind was removed before it came from the country, and there was no sign that indicated to them that there had been tubercles, but that was not communicated to this witness, and he saw nothing to lead him to think so.

752. *Sheriff Berry.*—They said that they saw tubercles.

753. *Mr. Comrie Thomson.*—It was not put to them that there was tubercle on the groin, and this witness says that he did not see that, and that it was not pointed out to him.

754. *Mr. Jameson.*—That shows how much weight is to be put upon his evidence as to this particular carcase; it is perfectly legitimate. (To witness) You passed that meat as good?—Yes.

755. And you say that you could not detect tuberculosis there; does that mean that when the lungs and viscera and other parts are removed, you cannot detect tuberculosis in flesh?—It might be seen by microscopic investigation.

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756. But, of course, that is not an investigation which you could go into at the dead-meat market?—No.

757. Not with regard to every side of beef that goes in there?—No.

758. How do you propose to stop tubercular meat—that is to say, sides of beasts which have been afflicted with local tuberculosis—coming from America to this country and being sold in the dead-meat market?—It ought to be inspected.

759. If the intestines are away, you cannot see if the tuberculosis has been local?—Veterinary surgeons and other persons might see something that I would not see.

760. Is it not perfectly certain that if the tuberculosis has been confined, as it was in the case of this bullock and this cow, to the lungs and pleura and the diaphragm, if these were taken out and the sides of beef presented to you at the dead-meat market, no person could tell that the animal had been affected by tuberculosis?—I do not say that at all.

761. Could you tell?—Probably I could not tell.

762. Could anybody tell except by looking at it with a microscope?—There might be naked-eye appearances in some of the glands.

763. But apart from that, where sides of meat are brought into Glasgow, either from abroad or from the country, you have no means of seeing whether that animal may or may not have been affected by local tubercles of the lungs or bowels unless from the external appearances in the flesh?—No.

764. So condemning the flesh of animals which are killed here will only obviate a small part of the danger, supposing your theory is correct?—Only a portion of the danger.

765. How much American meat comes into Glasgow in the shape of sides of beef in the year?—I cannot say; a very large amount.

766. Have any sides of American beef been condemned by you?—No.

767. Not one?—No.

768. The whole of the flesh of this bullock was quite sound to external appearance, except those parts that you have described?—So far as the naked eye could discern.

769. And it was a fat, well-conditioned bullock?—Yes, it seemed to be.

770. No emaciation?—No.

771. No softness in the flesh?—I would not say that the flesh was exactly up to the firmness that one would expect, but I do not advance my opinion on that matter as of very much value.

772. It was a young beast?—Yes, I believe so.

773. About the cow, tell us what you saw; you said it had chronic tuberculosis?—The process there had been more chronic.

774. Gradual?—Yes.

775. And as far as you could see, it had not spread in the cow to other parts of the system beyond the lungs?—Not so far as my examination went.

776. In the human subject people frequently recover from

tuberculosis, do they not?—Such a thing is known. We get in *post mortems* just as if sand had been sprinkled through the lung, where the tubercle has become calcified and inorganic.

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777. Showing that the disease had been stopped and the tubercles had become calcified, and the person had lived many years afterwards?—Yes.

778. It is impossible in such a case that the whole system had been diseased; it could never have been general in such persons?—No.

779. And it is a possible thing to have local tuberculosis without it becoming general through the system?—One of the differences between the habits of tuberculosis in the human being and in the lower animals is that we are much more liable to a local affection alone. That is the only manifestation, and it may not proceed any further. It may fasten on a gland or an organ.

780. How do you account for that?—It is one of the peculiarities that one finds from the difference of soil.

781. *Sheriff Berry*.—Do you say that it is more apt to be local in the human being than in the lower animals?—I do.

782. *Mr. Jameson*.—Is it not often apt to be quite local in animals also? Is it not characteristic of the tubercular bacilli that they often localise themselves in the place where they first find an entry to the animal and stop there?—One may say that, so far as obvious appearances go, the lesions caused by the tubercles are always local.

783. That is not an answer to my question. Does it not often happen both with man and the lower animals that the tubercular bacilli stay where they first find an entrance to the constitution, and never become general?—It does, but not nearly so frequently in the lower animals as with man.

784. Where it does occur in animals the flesh of the animal would be good flesh to eat?—I cannot admit that, because of the fact that this local manifestation is only an indication of a process that is going on all over the body—a risk or a chance to which the body has been exposed.

785. But we are taking the case both of animals and man where it has not become generalised, and it has become local.—One must have precision of terms, and I don't know any terms that have been more difficult to define than local and general. They have been discussed again and again, and people cannot agree about them at all. It does not follow that because the only appearance is local, it is only there where you have virus.

786. But take the case where it is only local in reality, is not the flesh good elsewhere?—I cannot assume any such thing.

787. But I am entitled to ask you to assume it. Assume the bacilli got entrance into a body, fastened into the lungs, and went no further, is not the flesh quite good?—That means that they are there and nowhere else.

788. And the rest of the animal is perfectly good?—Yes, it follows necessarily.

789. Do you agree with Koch when he says, on p. 192, “If we note the behaviour in the body of the tubercular bacilli, which

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790. We have been led off that a little bit. The appearances that you saw in the cow led you to think that the tuberculosis in the lung was of a chronic description, and that it had been there for a considerable period?—In all probability.

791. But the cow otherwise was not emaciated?—No; it was not a fat animal.

792. But there was no emaciation about it such as you would have expected if there had been miliary tuberculosis?—No, I cannot say that there was.

793. Did you find that some of the tubercles in this cow had come up to the chalky state?—Yes, in the lung.

794. That implies, does it not, that the bacillus or bacilli had died in these nodules and had got into this chalky condition which you sometimes find in *post mortems*?—Yes.

795. And the disease was rather being checked and not going on?—I cannot say that as a general proposition of the whole disease in the animal.

796. But in this particular animal did it not show that the disease in some parts of the animal had been receiving a check so as to allow this cretaceous deposit?—Yes, in that particular part.

797. And there was no appearance of tuberculosis in the flesh of this cow?—Not so far as I saw.

798. And it was of normal consistency?—To the best of my judgment it seemed to be.

799. And so far as you could judge by the eye, quite healthy?—Yes.

800. Is it your opinion that there is much more danger to the population from expectoration of consumptive patients than from tuberculosis?—It is very difficult for me to make a comparison; in fact there is substantial danger in both.

801. You used the word, I think, that the spores in the sputum of consumptive patients were almost immortal?—Yes, when they get into a dry condition there is almost no term to their existence.

802. They are always flying about in the air in all great cities?—Driven by the dust.

803. And I suppose everyone of us is breathing hundreds of them in the course of a year?—It is quite possible.

804. And probable?—Yes.

805. And we are none the worse of it?—None. So long as we keep up our stamina we may resist a good many germs, otherwise we would be badly off.

806. Would it not tend more to the health of the community to shut up all our consumptive patients in asylums than to condemn tuberculous meat?—It would be a preventive measure, but I am afraid it would cause greater disturbance than this has done.

807. Is there any country in Europe where there has been a law laid down to the effect that you are to destroy healthy

meat because the animal is locally affected by tuberculosis?—I don't know, but I think the French decree goes further than any restriction we have.

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808. Does it not specially provide for the sound flesh of animals locally affected by tuberculosis being used for human food?—Yes.

809. Why do you need to advance beyond that in Glasgow? France is apparently the home of culture on this subject?—Yes, but if that decree were enforced in Glasgow it would be a standard a mile higher than anything we have.

810. But it would be a mile lower than what you are wanting to impose?—It is progress.

811. You think that they will come up to you if you get that higher standard?—I live in hope.

812. Is it the case that, talking of this disease generally, first in its entrance to the system and for a long time afterwards it is really local and confined to a small area?—The obvious lesion, certainly.

813. The obvious lesion is just the symptom of the bacillus being present and living there, is it not?—Yes, it is a visible sign.

814. And that visible sign will follow wherever you have a bacillus living and thriving?—Wherever it is fixed and selects its abode.

815. And wherever it is living and thriving?—Yes.

816. And accordingly where you find, as in most cases you do, that for long after the beginning of the disease there are no visible signs of the disease, is not the inference from that that it has remained there all along and has not spread further?—So far as the naked eye is concerned, it is perfectly competent.

817. But if it had gone further, you would have had visible symptoms produced in other parts of the body?—No doubt it went further, but it did not find entertainment.

818. And not finding entertainment it did not affect other parts of the body?—No.

819. It is not in any sense a blood poison, is it?—Oh, yes.

820. You mean that the blood might carry the bacilli?—Yes.

821. But not in any other sense?—No.

822. Has it not been proved by experiment that you cannot inoculate an animal with tuberculosis by merely using meat from another animal suffering from local tuberculosis—take inoculation this time, which is the more direct way?—That is a much more severe test.

823. Have not experiments proved that you cannot inoculate an animal with tuberculosis by sound flesh from another animal which has been suffering from tuberculosis?—No; experiments have failed and experiments have succeeded, which shows that it is not a certainty, but a risk and a chance.

824. Who has succeeded in showing that by experiment?—The experiments by inoculation with the meat juice that we spoke about,

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825. That is tubercular juice, and a very different thing; I am talking of inoculation by using sound flesh from an animal suffering from local tuberculosis?—There have been such experiments certainly made—successfully inoculated by meat juice.

826. By whom?—I think I mentioned Galtier.

827. That was juice out of the tubercles, and is a very different thing; but I am taking it from the sound flesh of an animal suffering from local tuberculosis?—I cannot give you a reference, but I am quite certain that they were in that report which was submitted to the Congress.

828. You refer to that report, but you cannot point to any case of it?—No.

829. Do you know about the sanitary congresses that are held from time to time?—Yes.

830. Where were they held?—There was one lately in Glasgow. Every year there are sanitary congresses of some sort held.

831. Has not the general opinion expressed by them been that the sound meat of an animal locally affected may be used?—Up to 1888 that was so. It was only in 1888 that they have come up to the point of condemnation with reference to a condition of disease.

832. And that Paris congress was not a sanitary congress, but a congress on the particular subject of tuberculosis?—Yes.

833. Has any sanitary congress laid down or come to a resolution laying down that the sound meat of animals locally affected by tuberculosis should not be used as human food?—I am not aware of any.

834. Do you know that the sanitary congresses in Brussels in 1883 and the Hague in 1884 expressly laid down that the sound flesh of locally affected animals might be used?—Yes; I believe there were resolutions to that effect previous to 1888 at the repeated congresses which I have referred to—always with an increasing amount of opinion in favour of total seizure.

835. But never any resolution to that effect?—No.

836. The real and active causes of tuberculosis as a disease, as a rule, are overcrowded and unhealthy surroundings and unhealthy dwellings?—These are the things which lower the general constitution so much that this virus gets a chance of establishing itself.

837. In a general poverty of constitution?—Yes.

838. Acted on by these spores floating about in the air and inhaled by men and other animals?—By these spores admitted in some way.

839. By far the most frequent way is by inhalation?—Very frequently.

840. Has there ever been a case where cooked meat of animals affected with tuberculosis has been known to produce tuberculosis in the animal eating it?—There is a case mentioned by Lingard in the departmental report of the use of tuberculosed fowls by a woman who preferred her fowls underdone, who had been previously healthy, and who died of acute tuberculosis.

841. But that fowl had not been properly cooked?—No.

842. But if you bring up the germ to the boiling point, do you think it will live up to that point?—I would not be answerable for the destruction of spores even by that process, but bacilli will certainly go. The spores are very tough fellows.

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843. A hen's egg is the spore of a hen?—Yes.

844. And you destroy the vitality of it by bringing it up to the boiling point?—Yes.

845. And the spore of a bacillus would be killed as easily as the spore of a hen?—These inferior spores are favoured by their composition.

846. What is their chemical constitution?—I cannot tell you what it is; it is vital.

847. What are they made of—is it albumen or carbon?—Partly albumen.

848. If you take albumen up to the boiling point, it coagulates, does it not?—Yes.

849. And destroys all life in it?—Yes.

850. If you bring a spore up to the boiling point, you destroy life?—I don't know; we cannot carry it that length, because the facts are against us.

851. Is it not a well-known thing that albumen coagulates at 212° Fahr.?—Yes.

852. And if the spore is made of albumen at all, it will coagulate at that point?—But I don't say that it is made of albumen. It is an organic structure with albumen in it.

853. Supposing you abstract the albumen?—Spores have never been analysed; you can only ascertain their existence by sowing them and cultivating them.

854. Have you experimented with these spores?—No.

855. You never saw them?—No, I never saw them except in the shape of dots in the bacilli.

856. As to this case that you spoke of about the fowls, I refer you to question 8049 in the minutes of evidence. These fowls got the tuberculosis by picking up the spittle of a consumptive patient?—That is so.

857. And the woman herself who killed them stated that she took the fowls after very slight cooking as she was told by everybody that the bleeding flesh of fowls was the best way of gaining strength to overthrow a bronchial attack?—Yes.

858. Does not that show that these fowls had not been cooked at all?—Yes.

859. Then this cannot be taken as a case where meat was cooked?—It is exactly parallel.

860. *Sheriff Berry*.—Does it appear that it was not cooked?

861. *Mr. Jameson*.—It was slightly cooked; and then she explains that she had been told by everybody that the bleeding flesh of fowls was the best way of gaining strength to overthrow a bronchial attack. (To witness) That was the second wife of a soldier who had himself died of consumption?—Not the second wife; she was a friend of the first wife.

862. The woman got bronchitis, and then the husband died of tuberculosis, and then the wife also?—Yes.

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863. And this was another woman?—Yes.

864. You have known of the practice in Glasgow for the last sixteen or seventeen years to pass all sound flesh of animals affected by local tuberculosis in the lungs or viscera?—Yes.

865. During those years that this practice has been going on, has the death rate from tuberculosis gone up or down?—It has gone down with the general death rate.

866. But proportionally to the general death rate, has it gone up or down?—It has gone down as other diseases have done.

867. Proportionally to the death rate?—Yes.

868. That does not look as if this practice had been productive of much mischief?—It is no evidence that we would not have been much better off if we had not followed this practice.

869. But you have not been able to trace a case of tuberculosis to the eating of tubercular meat?—Never.

Re-examined by *Mr. Comrie Thomson*.

870. With regard to the last matter of the roasting, do I understand you to say that, as far as experiments have gone, they have been against the idea that the boiling point is sufficient to destroy the vitality of the spores?—Yes, that is so. It certainly diminishes it very much, but nothing like affording a satisfactory settlement.

871. I find in a book which has been handed to me, entitled “Influence of Heredity and Contagion of Tuberculosis,” there is a man called Toussaint, Professor at the Toulouse Veterinary School, who says—“In another series of experiments, morsels of the flesh of a tuberculous pig were roasted in the flame of a gas-burner, and two rabbits were inoculated with the juice expressed from these. Two other rabbits were inoculated with juice from pieces of non-roasted flesh. The latter died 120 days after inoculation; one of the former was killed on the fifty-sixth day, and was found to be tuberculous; the other was alive when the report was published, but it was very emaciated.” That statement that the rabbit was tuberculous is one of the classes of experiment to which you have been referring?—Yes.

872. The French decree to which you have referred would meet the present case that we have been inquiring into?—Under it the whole animals would be condemned in this case.

873. “The flesh of tuberculous animals shall be excluded from consumption, first, if the lesions are generalised; and, second, if the lesions, although localised, have invaded the greater part of an organ, or are manifested by an eruption on the walls of the chest or of the abdominal cavity”; so that in France this cow and bullock would have been condemned?—Yes.

874. Is it not the case that United States cattle are slaughtered at this port?—Yes.

875. In considerable numbers?—Yes.

876. And Canadian cattle?—Yes.

877. And the Local Authority has control over them?—Yes but I think counsel referred to the dead meat.

878. But I am referring to the other side; there is a large quantity of live stock brought here?—Yes. May 28
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879. For which there is every opportunity for examination?—Yes. Dr. J. B.
Russell.

880. Am I right that prairie-fed cattle are much less likely to be affected by tuberculosis than cattle reared under the conditions with which we are familiar?—The presumption is that the American cattle are comparatively healthy.

881. And comparatively free of tuberculosis?—Yes.

882. Even assuming that you cannot get at the dead meat imported, what you would propose would reduce the risk in regard to home-grown cattle?—Yes.

883. We will take one at a time and deal with the Yankees afterwards. I want to refer you to a bit of evidence given by Professor M'Call before the committee with the view of pointing out this fact to which I am about to advert, disclosed subsequent to 1884.

884. *Mr. Jameson.*—I understand Professor M'Call is here, and surely he is the best evidence.

885. *Mr. Comrie Thomson.*—It is only one point I would refer you to, p. 132, questions 4247 and 4248. "Is it a disease that is easily detected in contradistinction to other lung diseases?—In a certain stage it is easily detected, and in others it is difficult. Is that stage in the early stage?—It is very difficult in the early stages if the animal is a sound animal in other respects. I have a specimen of the effect on the muscles and bones." The finding of tubercles in the fibres of the flesh and the marrow of the bones was a very instructive fact in this matter. I wish it on the notes that this was a fact that was not in the minds of the parties in 1884. I now refer you to p. 194 of Koch's essay:—"For instance, under special circumstances they may enter the blood stream. This happens, as Ponfick has shown, when tuberculosis attacks the thoracic duct and reaches its interior; then the tubercle bacilli pass from the lymph stream direct into the circulation. A second and certainly the most common way in which the tubercle bacilli enter the blood was discovered by Weigert, viz., by the formation of tubercles in the walls of veins and the bursting of the disintegrating nodules into the lumen of the vessel. A third possible way is mentioned in the case described on p. 105, where the bacilli grew into the lumen of an artery. In all these cases the bacilli are quickly carried away by the blood-stream, distributed to the most different organs of the body and deposited there." That is the doctrine that you are enforcing here?—Precisely. These are the facts that are behind the opinion I expressed.

886. Look at the opposite page, 195. "The almost invariable presence of caseous or calcified bronchial glands, in the diseased states just mentioned, suggests rather that the lymphatic glands are not always an insurmountable barrier to the further progress of the bacilli, and that just as single bacilli are carried into the lymphatic glands by means of wandering cells and the lymph stream, so in the same way by the help of the wandering

May 28, 1889. "cells they may again leave the lymphatic glands, and, taking a centripetal direction, reach the blood by way of the lymph stream." If the views of the learned author are correct, he says there is every facility for these organisms being rapidly distributed through every part of the body?—Yes.

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887. You adopt these views, and proceed upon them as ascertained?—Yes.

888. My learned friend made a great point of tuberculosis not appearing in the alimentary canal; is it not the case that the bacillus may very well escape the juices of the canal and of the stomach?—Certainly.

889. And pass unharmed out of its place into the system?—Yes, that is so. It depends very much on the constitutional condition of the individual.

890. Whether he is able to get the best of the bacilli or not?—Yes.

891. Is it not the case that they sometimes penetrate through the lining membranes of the stomach and so into the lymphatic system?—Yes.

892. It is quite true, I suppose, in adults that the tubercular disease appears mainly in the form of phthisis?—Yes.

893. That is the most fatal form?—Yes.

894. Does it not appear in the bone?—It does appear in the bones.

895. And in other parts of the body?—Yes.

896. It is not infrequent in the bones?—Very frequent.

897. Is there any reason to suppose that it has reached such a place as the bone by inhalation any more than by ingestion?—No; it being in the current of the blood it may pass into the bones by some weakness of the part.

898. Does the fact that it takes the form of phthisis appear conclusive of the notion that inhalation is the main way by which bacillus is introduced?—It is certainly not conclusive.

899. All the instances which I have mentioned point to ingestion being one of the modes by which it is conveyed?—Yes.

900. But you suppose that the bacilli would prefer those portions of the blood where the blood is slowest?—Yes, that is one of the circumstances that determines it. In the capillary part of the lungs between the veins and the arteries there is ample opportunity for stagnation, and in the human being it is the apex where the movements of the lungs are more sluggish.

901. And there is a temptation in the apices and the capillary parts of the lungs which they take advantage of?—Yes.

902. Is that conclusive?—It shows the tendency that it would have to settle there.

Re-cross by *Mr. Jameson*.

903. Does not the whole blood of the body go through the lungs every few minutes?—Yes.

904. How often does the whole blood of the body go through the lungs?—I cannot say how often.

905. What time does it take for a complete circulation?—It

does not at any one time all pass through the lungs, but sooner or later it does. May 28,
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906. Is not the blood kept oxygenated by going through the lungs?—Yes. Dr. J. B.
Russell.

907. If it is not oxygenated the animal dies?—Yes.

908. Is it not the lung through which the blood is constantly flowing,—the blood being driven by the heart?—Yes.

909. Why should a bacillus take up its habitation there?—There are eddies in the life stream, quiet places, where the creature has an opportunity of settling.

910. Do you mean to suggest that a complete stagnation takes place in the lungs?—Not stagnation, but it comparatively lessens its speed.

911. I suppose you mean that in the extremity of the lung there will be less of a rush than in the middle of it?—Yes.

912. The whole lung is suffused with blood?—Yes.

913. And constantly going out of it through the system?—Yes.

914. Does it not come to this, that it is because the lungs are exposed to the injection of bacilli through the breath and that it is a soft sort of substance on which the bacillus can lodge?—There is no doubt that it acts.

915. Has it anything to do with there being a slow circulation of the blood?—Yes, that part of the apices is the slowest part of the lungs.

916. But much faster than any other part of the body?—I don't know.

917. Much more so than the bones or the lymphatic organs?—Yes.

918. It is much more likely to be got by inhalation?—It is more likely it would take that path.

919. You spoke of warts on butchers' hands as tuberculous; are they tubercular?—Yes.

920. Do they die of these warts?—I never heard of a case.

921. So that that is a good case of local tuberculosis without the general system being invaded?—Yes; but in my profession it is not the same, because there have been fatal cases following from such in the human being.

Dr. HENRY D. LITTLEJOHN, *sworn*, examined by
Mr. Comrie Thomson.

Dr. H. D.
Littlejohn.

922. You are a Doctor of Medicine, and a Fellow of the Royal College of Surgeons?—I am.

923. For many years you have been a lecturer in the Medical School of Edinburgh, and for 25 years you have been Medical Officer of Health for Edinburgh?—I have.

924. During that period you have acted as medical referee in all disputed cases occurring in the slaughter-houses?—I have.

925. You have a large experience in all kinds of disease affecting cattle?—I have.

926. Have you paid special attention to the subject of tuberculosis?—I have, so far as it has occurred in Edinburgh.

927. And you have specially reported to the Magistrates and

May 28, 1889. Town Council of Edinburgh on the subject?—Yes, from time to time.

Dr. H. D. Littlejohn. 928. You also gave evidence before the Commission which lately considered the matter?—I did so.

929. I wish to refer you to the evidence you gave at that Commission, especially with reference to the date, which was on 29th May, 1888. I refer you to question 7621, which is as follows:—"In the event of the powers which you desire to possess being given, whereby you may seize animals suffering from tuberculosis, would you be disposed to grant compensation for their destruction?—I speak with diffidence on the matter, but I would be inclined only to grant compensation where we happened to make a mistake; that is to say, if we got hold of an animal and killed it, and found that we had made a mistake, then I think that the owner might be entitled to some compensation, but in the meantime I am perfectly sure that our inspectors and myself will only act in the case where we find a cow emaciated; because, if the animal were otherwise well nourished, I do not see that there would be any reason to condemn it. From the number of emaciated animals that I see in our markets, I am perfectly sure that if we had the power of seizure, it would be a very great boon indeed." Then you are asked, question 7664—"Do you think enough evidence exists to show that tuberculosis is so dangerous that this course you recommend should be pursued, or would you advise further experiments on the nature and effects of the disease?—I think decidedly that further experiments are required to clear up many points connected with this disease, as, for example, the use or employment of meat from an exceedingly fine animal that exhibits this tuberculosis. With all my experience, I cannot—looking at the meat—say that that meat could do any harm, and looking at our poor population, and the price of butcher meat, I am inclined to think that some of that meat might go into human consumption, but I am overborne by my fellow-inspectors, and the animal is condemned *in toto*. I should like investigations to be made to ascertain how far the flesh which appears to be sound is really affected in any way with tuberculosis. This has not as yet been determined, so far as I am aware." These were the opinions you expressed just a year ago to-day, I think?—Yes.

930. You mention there that you, in deference to the opinion of the practical inspectors with whom you were associated, did in Edinburgh condemn the whole animal?—Yes.

931. Have you, as the result of further consideration and experiment and inquiry, seen reason at all to modify the view which you then expressed?—We act with greater decision, and condemn the whole animal.

932. And you do condemn the whole animal?—Yes, we do condemn the whole animal in Edinburgh.

933. Are you aware that the tendency of scientific opinion of those who have paid special attention to this matter is in the direction of condemning the whole animal?—Undoubtedly. Since I gave that evidence, the French have reported on the

whole matter, and their decision is that the whole animal must be condemned, even where the disease is to a slight extent. May 28,
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934. And you are aware that the unanimous report of the Commission before whom you gave evidence, to which I have just referred, was also in favour of condemning the whole animal?—I am aware of that. Dr. H. D.
Littlejohn.

935. Now, these two facts, the result of the French inquiry and the result of the English Commission, would, I suppose, have considerable effect in forming the opinion of those who were charged with this matter?—Undoubtedly.

936. Had there been before them two such exhaustive inquiries before?—Never before.

937. So that the state of professional opinion on the matter is, in your opinion, properly modified by the result of those inquiries?—Undoubtedly, strengthened and modified.

938. And I may take it that your own personal view is modified in the matter?—Undoubtedly.

939. Now, on Thursday, 9th May last, did you examine two carcasses at the Moore Street slaughter-house, along with Dr. Russell and Dr. Coats, in presence of the inspector?—I did.

940. The first one was a prime ox, in good condition?—Yes.

941. In a good state of nutrition?—In a good state of nutrition.

942. Had it been newly dressed?—Yes.

943. The internal organs had been removed?—Yes.

944. Did you observe evidence of the deposit of tuberculosis?—Both on the pleura and on the surface of the lungs, which were shown me by the inspector.

945. Was that on the lining membrane?—On the lining membrane,—the lungs themselves being apparently unaffected.

946. Was it a comparatively recent deposit apparently?—Yes, it was in the acute stage.

947. Was it unmistakable tuberculosis?—No one with any knowledge of cattle diseases could have made a mistake.

948. Could it be accounted for by overdriving just before slaughter?—Utterly impossible.

949. Did you make a section of the flesh?—I did.

950. What was your observation upon it?—The flesh closest to this deposit was in a most unsatisfactory state; it was deficient in colour, and in consistence.

951. It was soft?—Soft, and deficient in colour?

952. It was dull?—Yes. Had I seen that flesh alone, with nothing else about the carcass, I would have suspected the presence of disease of some kind.

953. Was there a certain iridescence?—There was iridescence which has again and again attracted my attention in these cases.

954. And is that generally associated with previous illness?—So far as my experience goes it is.

955. Were the lungs and heart and wind-pipe and great vessels pointed out to you by the inspector?—They were.

May 28, 1889. 956. What did you find on the surface of the lungs?—On the surface of the lungs, but not implicating them, there was an undoubted crop of recent tubercle—that is to say, tubercle in the acute stage.

Dr. H. D. Littlejohn.

957. What do you say as to that animal—was it diseased?—I have no hesitation in saying that this was a diseased animal, and that the flesh should not be allowed to go out into human consumption.

958. Or any part of it?—Or any part of it.

959. The disease with which it was affected was tuberculosis?—It was, and in an acute stage.

960. And do you think it was unfit for human food?—That was my opinion. I would not have partaken of the flesh myself, and I could not have given it to my family or to others.

961. Then, the second animal was a cow?—It was.

962. An aged beast and second-rate?—Aged and undoubtedly a second-class animal.

963. What did you find on its left chest?—We found evidence of tubercle, and we found abundant evidence of the presence of tubercle in the tissue of the lungs, thus differing from the other animal. I mean the intimate tissue of the lungs in this case was affected.

964. Did the lungs and the thoracic organs generally show numerous deposits of tubercle?—Numerous deposits of tubercle unmistakably.

965. Both at the free extremity of one of them, and also in the substance?—That was so.

966. Did this animal's tuberculosis appear to be rather chronic—more chronic than the other one?—It was undoubtedly of a more chronic character than the first case.

967. And the flesh was rather dark?—It was dark, and the whole animal was apparently imperfectly nourished; it was just bordering on being unmarketable, so far as mere nutrition was concerned.

968. If you were told, and if it were the fact, that in cutting into the prepectoral and the inguinal glands of the cow, tubercular deposit was found in an advanced stage, what would that indicate to you as to the condition of the animal?—That indicates a very complete infection of the carcase.

969. And if that were found in the ox also, would you say the same thing?—That would strengthen the opinion that I have already given.

970. But apart from that, in the case of the cow, as well as in the ox, are you of opinion that the whole carcase should be condemned as unfit for human food?—I have no hesitation in saying so.

971. Whenever there is evidence of tubercular deposit in the glands, what does that indicate to you?—That indicates a very deep and complete infection.

972. Which may pervade any part of the animal's system?—Which must pervade every part of the system.

973. Although not visible to the naked eye?—That is my opinion. May 28,
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974. And therein the danger consists?—That is the great danger. Dr. H. D.
Littlejohn.

975. Are you of opinion that tuberculosis may be communicated from the animal to the human being by ingestion as well as by inhalation?—I believe it can.

976. This question, as I think you have already told us was the case with yourself, has occupied the public mind and the scientific mind since 1881, since Koch's discovery of bacillus?—Undoubtedly.

977. And every year there has been rapid advance of human knowledge on the subject?—We are learning every day.

978. And, in your opinion, we have arrived at the stage when the conclusion of the Commission and of the French Government is justified from considerations of public health?—Yes, and should be acted upon. A few years ago, for example, we would have allowed anyone to sleep with a sick relative who was affected with consumption, but no medical man within the last few years would think of allowing anyone to sleep with a consumptive patient, and that is due to recent discoveries which from day to day are being brought to light.

979. And in expressing the opinion that these views should be acted upon, I suppose you have had fully in view the economic question which, of course, rather draws one to the other side?—I have, undoubtedly.

Cross-examined by *Mr. McKechnie*.

980. A few years ago you allowed people to sleep with a relative who had consumption, such as husband and wife?—Yes, I am sorry to say we did.

981. Brothers and sisters?—Yes.

982. Did the husbands and brothers who were not affected but who slept with affected persons always die of consumption?—I cannot say always, because I have not been able to trace their subsequent history; but in cases about which I have been able to exercise a little care, I have undoubtedly been struck with the frequency with which the disease has been communicated.

983. When a brother has consumption and sleeps with another brother who has not consumption the second brother is apt to die of consumption, is that so?—Well, I can hardly state it so strongly as that, but on prudential grounds I would prevent the two sleeping together.

984. The prudence would only apply to preventing the second brother from getting consumption?—Yes.

985. And you would only direct that because you would be afraid of him dying from consumption?—Yes.

986. If the second brother died of consumption, was it not just as likely he got it in the same way as the other brother got it?—You are quite entitled to say so.

987. From consumption being in the family, you have known

May 28, 1889. this to happen regularly that children have come to a certain age and just dropped off?—Undoubtedly.

Dr. H. D. Littlejohn. 988. You would not say that that happened because they slept together?—Undoubtedly we can never give legal proof of these matters—I could give medical proof, but for legal proof I leave that to you.

989. Give me the medical proof.—The large amount of deaths from tuberculous disease in our young population, which we cannot account for by mere sleeping together.

990. But which is decreasing every day?—I am not inclined to go so far as that.

991. Have you not read the Registrar General's returns?—No, I have not.

992. You have made returns yourself?—Yes.

993. I think I have seen your name on some of them?—Yes, I believe you have.

994. Is it not the case that in Edinburgh deaths from tuberculosis have been on the decrease for the last ten years?—I think not.

995. Have you not heard that it is so in Glasgow?—Very likely, but I have nothing to do with Glasgow.

996. Now, on 29th May, 1888, which is nearly a year ago, you did not entertain the same opinion as you do to-day?—I did, but I was addressing myself more to the economic view of the matter. I confess there is this difficulty that with tuberculosis in fine animals the meat is, so to speak, destroyed, and not made use of in the shape of human food.

997. But if you entertained the same medical opinions then as you do to-day, you kept them to yourself?—Well, I am like all sanitarians, learning day by day—I am still a pupil.

998. If you entertained the same opinions a year ago as you do to-day you kept them to yourself?—I was not called upon at that particular stage to describe them as fully as I am doing to-day.

999. You were not cross-examined?—No.

1000. I understand nobody was cross-examined at that Commission?—It is exceedingly difficult to explain all this scientifically or medically to a Commission such as that.

1001. Then, I understand it is altogether unsatisfactory because you were examined by men who did not understand the subject, and did not understand how to put questions about it?—No, it is not that.

1002. *Mr. Comrie Thomson.*—They were as good men as any who could be got who had studied the subject.

1003. *Mr. M'Kechnie.*—The only person who, it seems to me, could put questions was Mr. Stirling of Kippendavie, who is a Highland laird. (To witness) You don't think it was satisfactorily done there, at any rate?—I don't mean to say so at all. I think they ultimately came to the proper conclusion.

1004. Is there such a thing as local tuberculosis?—We could never recognise tuberculosis unless it localised itself.

1005. Then there is such a thing as local tuberculosis?—Yes, undoubtedly.

1006. And up till recently, where you found local tuberculosis, you did not condemn the whole carcase?—No, that was not the reason. May 28,
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1007. Was that the fact?—First of all we did not recognise tuberculosis. I confess for myself that, until of late years, these peculiar tuberculous deposits went by the name of angleberries.

1008. That is what the butchers call them?—Yes.

1009. Then, up to the time when Koch made what is called his great discovery, none of you knew anything about it?—I beg your pardon.

1010. What did you know about it before 1881—you called it angleberries?—Yes; but we had begun then to suspect that this was tuberculosis.

1011. Had you begun to suspect that before Koch said so?—Yes; we did not require Koch to tell us that.

1012. Then, my question is, up to the time when you called it local tuberculosis you did not condemn the whole animal?—Not unless the flesh of the animal was markedly affected, and the disease therefore had affected the whole constitution of the animal.

1013. If you found upon section that the flesh was sound, and the animal was not emaciated, you did not condemn it?—No, and the amount of tubercular deposit was small.

1014. I see that the very fourth question put to you, 7603, was this—"Will you describe to the committee the method which is adopted in Edinburgh of dealing with carcases affected with tuberculosis?—If the animal is in good condition, if the tubercle is limited, if the glands are not affected and if the flesh on section appears sound, we pass that animal in our slaughter-houses. If, on the other hand, the animal is at all emaciated it is at once condemned as unmarketable. If the tuberculosis is extensive, and if the glands are affected, whatever be the condition of the animal the carcase is condemned." You gave that answer last year?—Yes, and I am quite prepared to give that answer now.

1015. That is still correct?—If the glands are affected.

1016. If the glands are not affected?—No, if the glands are affected.

1017. If the glands are affected you condemn the animal?—Yes, unhesitatingly.

1018. And if the glands are not affected you don't condemn it, is that so?—No.

1019. Then, it is of no consequence now what glands are affected?—You are mistaken in that.

1020. You said last year that if the tuberculosis is extensive, and if the glands are affected, whatever be the condition of the animal, the carcase is condemned. Note that what you lay stress upon there is the affection of the gland. Now, this year do you lay any stress at all on whether the glands are sound or not?—I do not.

1021. Then, you would destroy the animal this year even if the glands are perfectly sound?—Undoubtedly.

May 28, 1889. 1022. What science has led to that change of opinion?—First of all, my own reading on the matter.

Dr. H. D. Littlejohn. 1023. What have you read?—I have read the results of the Paris Congress, and I have read deeply from this very report from which you have been quoting, and I have thought generally over the subject.

1024. We have not got a single step beyond what we have been at before. You have read this blue-book, and you have read the reports of the Paris Congress. Now, if the Paris Congress were to meet to-morrow and to come to a different conclusion, would you alter your opinion?—It would depend on the conclusion.

1025. Suppose the conclusion were just reversed; suppose they were to say what you said last year; suppose the Congress were to resolve that Dr. Littlejohn was perfectly correct on the 29th of May, 1888, and perfectly wrong on the 28th of May, 1889, would you change your opinion?—I don't see that I would be called upon to do so at all. I can judge of the conclusions of a congress, especially when the papers submitted to that congress have also been submitted to me in print.

1026. But you have done no work of your own?—I have almost daily examined those carcasses.

1027. And you have made no experiment?—No, with this explanation of the evidence I have given that when I speak of "we" it includes the inspectors. I must take these inspectors along with me, and I have to drag comparatively unscientific men up to the position which I assume as a scientific man.

1028. You drag them up to this, "We pass that animal"?—Yes, at one time.

1029. And that is the only way I find them mentioned in the evidence?—Yes, I acknowledge that.

1030. I think, Dr. Littlejohn, I have seen you sometimes giving evidence in the law courts in Edinburgh in actions for damages?—Yes.

1031. Have you ever heard of an action for damages against a butcher in Edinburgh or elsewhere for damage done to a customer by tuberculous meat?—No.

1032. Have you ever known of death being caused by the ingestion of food from a tuberculous carcase into the human stomach?—Never.

1033. Have you ever known of tuberculosis being conveyed from the stomach to the lungs or any part of the body by the alimentary canal?—So far as I know personally, no—I mean in my professional experience.

1034. Have you ever heard of such a thing?—I have.

1035. Who from?—I have seen it in print.

1036. But you cannot say who printed it?—I think I can give you the exact reference to where some of the lower animals had been fed by tuberculous food and afterwards developed tuberculosis in their own system.

1037-9. But I am talking of men?—I cannot give you that; we are not allowed even to treat prisoners in that way.

1040. But you have never heard of such a thing?—No.

1041. Is it not the case that tuberculosis is most frequently found in the lungs in man?—Undoubtedly.

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1042. And is it not most commonly caused by the inhalation of germs?—Most commonly.

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1043. Why do you think that tuberculosis cannot come from the stomach?—I don't understand how tuberculosis can come from digested food.

1044. Must it not come from the stomach if it comes from tuberculous food?—It may do so.

1045. Must it not do so?—It is not absolutely impossible.

1046. About tuberculous food—I mean the food of an animal which died from tuberculosis—where it is partaken of by a human being it finds its way straight to the stomach?—Yes.

1047-8. And from thence it finds its way by the alimentary canal and nourishes the system?—Yes.

1049. Then, if you have never heard of tuberculosis got from the stomach or from the alimentary canal, how could you put it down to the ingestion of food at all?—Well, I cannot do so.

1050. You cannot scientifically do so?—No.

1051. But you could quite well account for tuberculosis being got by inhalation?—Perfectly easily.

1052. You know that germs are floating about continually?—Yes.

1053. And I daresay those of us who spend our time in the law courts must swallow a great many of them?—I think not, because you would have perished of consumption long ago.

1054. But probably we are able to resist them?—I don't know your means of resisting them.

1055. Did you make any section of the lungs of this animal?—No.

1056. If you had made a section of the lungs, would you be able to say whether the lungs were tuberculosed?—Yes.

1057. Why did you not make such a section?—Because I submitted them to palpation. I felt them very carefully all over.

1058. They were hard when you saw them?—They were not.

1059. Were they thawed before you saw them? Give me the date when you saw them.—The 9th.

1060. Then they were in the refrigerator. You did not try if they would float in water?—There was no necessity for doing that.

1061. Did you try it?—No, I would never think of doing it.

1062. But if somebody else thought of it, and if these lungs floated in water, what is your opinion as to whether there was any tuberculosis in them?—That either there was very little or none at all.

1063. And if these lungs crepitated when touched, that also showed that there was no tuberculosis?—Undoubtedly.

1064. Local tuberculosis often heals?—There is no more curable disease than consumption.

1065. And I suppose it heals in animals as well as in man?—

- May 28, 1889. We do not allow them to live so long. If we did allow them to live so long I have no doubt we would find it so with them also.
- Dr. H. D. Littlejohn. 1066. I have no doubt that in post mortem examinations you have often come across, in the lungs of your subjects, indications of sores which showed that the party had suffered from tuberculosis?—Nothing is more frequent.
1067. You find that in the lungs of men who have been fathers?—Fathers and grandfathers.
1068. And their children and grandchildren are alive and healthy, and are going about the streets?—That I cannot speak to.
1069. But have you ever known the case of a human being recovering from general tuberculosis—I mean by that where the whole system is affected?—I think not.
1070. That is impossible?—Of course, there is nothing impossible to medical skill.
1071. You think medical skill can do everything?—I do.
1072. I am very glad to hear that; but your expectation of a person who was suffering from general tuberculosis would be death?—Undoubtedly.
- 1073-4. And the same of an animal?—Undoubtedly.
1075. So that you would draw a sharp line between the two—the one often occurs, and is curable; the other, apart from the omnipotence of medical science, is not curable?—Quite so. Of course, it is one and the same disease; the one is arrested in a way we cannot understand, and the other goes on to a fatal issue.
1076. But local tuberculosis, I think, arrests itself?—No, not necessarily.
1077. Does it not cause a chalky deposit round the part?—It may do so, but why and when we cannot tell.
1078. How long do you think this bacillus will live?—I cannot tell.
1079. I mean, how long will it be a scientific fact?—It will last during your day and mine.
1080. You remember the great discovery of the cholera microbe?—Yes.
1081. That was another form of the bacillus?—Yes.
1082. Is it not scientifically dead?—I cannot say.
1083. Does anybody believe in it now?—I am not prepared to say that there are no persons who believe in it.
1084. Do you believe in it now?—I will tell you that when the next epidemic of cholera comes.
1085. You will reserve your opinion until then?—Yes.
1086. At one time you did believe in it, did you not?—No, I did not.
1087. Is it not the case that this is all speculation, all matter of opinion, all this about the food of an animal suffering from local tuberculosis being dangerous to man?—No, it is not; it is a question of common sense. If an animal is diseased it is unfit for human food, and common sense rebels against it being used as human food. We cannot have a deposit of tubercle, especially

in its acute stage, without the whole blood of the animal being affected. May 28,
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1088. Do you know that there are arrangements wisely devised by Providence in the human system for expelling poison from the system?—Yes. Dr. H. D.
Littlejohn.

1089. And that poisons are continually being expelled?—Yes, I quite agree with you.

1090. This may be dangerous if taken in its raw state, but has cooking no effect upon it?—I have no doubt it has.

1091. The boiling point of water is 212 degrees; what is the highest point of temperature at which one of these bacilli will live?—I should say under that.

1092. We have been told that they are immortal; you don't believe that?—

1093. *Mr. Comrie Thomson.*—The spores were said to be immortal.

1094. *Mr. McKechnie.*—Well, take it that it is the spores; but take the bacilli themselves first, is it not the case that they will die at a temperature of 107 degrees?—I believe so.

1095. That is what the gentlemen who reported last year found?—Yes.

1096. So that if you were eating cooked food, cooked at 212 degrees, the bacilli would be pretty well in their graves, would they not?—Yes; but what about the spores?

1097. I am to ask you about the spores; have you ever seen a spore?—No, never.

1098. Have you ever seen anybody who has seen a spore?—No, I am not sure that I have.

1099. Are not the spores just in the air?—They must be in the air beforehand. You cannot have bacilli without the spores.

1100. Why not? if you swallow one, does he always carry a spore along with him?—No; but there is the female bacillus.

1101. Suppose it was a male bacillus, he will give rise to none?—Of course not, unless he is a hermaphrodite.

1102. According to you, is the bacillus of tuberculosis a vegetable or an animal?—I cannot answer that question.

1103. We have been told it is a vegetable.—I cannot answer that question. You have plenty of gentlemen here who will be able authoritatively to answer it.

1104. Have you ever seen a bacillus under the microscope yourself?—Yes, hundreds of times.

1105. Is it an organism at all?—Undoubtedly it is, of a very low type.

1106. Is it continuous?—It is.

1107. It is a kind of protoplasm?—A modification of protoplasm.

1108-9. It is the first stuff?—It is.

1110. Then why will you invent a spore to make it first of the first?—Because the spores appear in the protoplasm before these higher structures,—because the bacillus is a higher structure than the spore.

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1111. Then, is the bacillus the child of the protoplasm?—So we believe.

1112. But it is all guess-work?—It is scientific guess-work, and scientific guess-work, as you know, is of great importance.

1113. You made a section of the flesh of the bullock; were you told its age?—I was not.

1114. You could not form any idea?—I could.

1115-6. It was a young animal?—Yes. It would be a couple of years old.

1117. Have you been in the habit of condemning two-year-old bullocks in Edinburgh for tuberculosis?—We have.

1118. Since when?—I suppose for the last three or four years.

1119. That is to say, when the glands were affected?—When the glands, and when the flesh did not present a normal appearance, or was otherwise affected.

1120. In this bullock were the glands affected?—I believe they were.

1121. Did you see them?—I did not.

1122. Did you make a section?—I did not.

1123. Then, in the cow, in the lungs you found the tubercular matter?—Yes.

1124. Anything of that kind in the bullock?—No.

1125. And in the bullock you only found some of those knots?—I suppose there would be about 100 or 150 of the tubercular deposits on the surface of the lung.

1126. In the lining?—Yes.

1127. For how many days do you think the bullock had been ill?—I cannot tell; it might have been ill for three weeks.

1128. So that overdriving would not account for it?—No.

1129. But furious driving of this bullock might account for it?—If the tubercle was undoubtedly in the bullock's blood, I think the fact of the bullock being overdriven might have developed this acute stage of tuberculosis; it is quite possible.

1130. That is to say, if there was a predisposition there, the overdriving would account for all the rest?—Not for all the rest, but it might account for a large portion of what I saw.

1131. Before the 29th of May, 1888, you would not have condemned this bullock, would you?—I think I would.

1132. Why?—Because I am of opinion that disease cannot be deposited in an animal in the acute stage without the whole of the blood of that animal being affected, and as the blood goes to every portion of the tissue of the animal, in my opinion the whole of that animal is affected; but I am associated with inspectors who are plain practical men, and I give way. I am compelled to give way to the majority when they say, "Doctor, 'this is a very slight attack.'" If the flesh is otherwise good, and the animal in fine condition, I am overborne, and that animal passes into the market.

1133. *Sheriff Berry*.—Do you mean to say that is your practice now?—No; previously I was overborne.

1134. *Mr. McKechnie*.—You were overborne and no harm was

done?—This world will never know the harm that was done. I May 28,
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am not prepared to say that no harm was done.

1135. But do you say that any harm was done?—As the Dr. H. D.
medical officer responsible for the health of the community of Littlejohn.
Edinburgh, I strongly suspect that harm was done.

1136-7. Do you not find that the inhabitants of Edinburgh are just as healthy now since you changed your opinion as they were before?—Edinburgh is getting healthier every day.

1138. You said that the state of mind you were in before the Commission was what is stated in question 7664, that “I should like investigations to be made to ascertain how far the flesh which appears to be sound is really affected in any way with tuberculosis. This has not as yet been determined, so far as I am aware,”—that is to say, that the flesh was affected. Now, has that been determined yet otherwise than by the resolution of a congress?—No, it has not.

1139. Do you think the resolution of a congress is a proper way to ascertain a scientific fact?—No; I think you are misleading his Lordship.

1140. I am not misleading his Lordship; there is no danger of that. Do you think that is the proper way of ascertaining a scientific fact?—Undoubtedly, the expression of the opinion of a large congress of the most eminent veterinarians in the world must weigh with me as a practical officer.

1141. Then, will you read question 7669, “Are you prepared to advise this committee as to the nature and extent and method of carrying out those experiments and the cost?” These were the experiments which you thought necessary to ascertain the fact?—Yes.

1142. Your answer is, “As I have said, I think experiments should be made with the flesh of animals affected with tuberculosis, to make out really how much the muscular tissue which we eat is or is not affected with this disease.” That was your opinion then?—And it is my opinion still.

1143. Then, you still think these experiments ought to be carried out?—No doubt of it.

1144. And you don't think the matter is at all conclusively settled until the experiments are carried out?—Most certainly not. It is not conclusively settled on a scientific basis, but on a practical question as to the health of a community my mind is made up.

1145. Did you hear of the sanitary congresses held at Brussels in 1883 and at the Hague in 1884?—You remind me of them.

1146. You remember that these congresses were held, and that resolutions were come to at them to the effect that such meat as is condemned in this case need not be condemned?—I am not at all surprised at that. Public opinion is forming every day. I have lived to see pleuro-pneumonia universally condemned, and I myself have passed many thousand carcasses of that kind.

1147. Are you surprised that in the city where Koch made his great discovery and where he lives, and of which he is the public

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 Dr. H. D. Littlejohn. officer of health as you are in Edinburgh, it should be the opinion that this food may be partaken of with safety?—A prophet has no honour in his own country.
1148. But I think Koch has got a great many honours?— If his views are not carried out in his own town, that is the only answer I can give.
1149. Koch says in his book at page 191, “Another point of importance to remember is that tuberculosis in animals used for food, especially *perlsucht* in cattle, remains more or less localised, so that there would be no danger, except in eating the tubercular lungs, glands, &c.” Do you agree with that?—Decidedly not. What is the date of that?
1150. It was published in 1884.—The world has grown wiser since then.
1151. At least you have?—I am still a student.
1152. What has happened in the way of scientific discovery by experiment or otherwise since 1884 to prove that the world has grown wiser on this point?—It is difficult to say, except experiments showing that tuberculosis can be communicated to the lower animals.
1153. Nobody ever doubted that?—I am not sure about that.
1154. Do you know Professor M'Fadyean of Edinburgh?—Yes.
1155. Is he an authority on this subject?—I should regard him as such.
- 1156-7. He was also a witness before the Royal Commission?—I believe he was.
1158. I show you a passage written by him in the *Journal of Comparative Pathology* for December, 1888. “But the question of the danger of the flesh or meat from tubercular animals stands as yet on quite a different footing. The experiments that are generally cited as bearing on this point are of little value. Thus, the cases in which animals have been infected by feeding with obviously tubercular organs or tissues in the raw state were valuable at the time when the infective nature of tuberculosis and the identity of tubercular processes in animals and men were still disputed. But it is quite inadmissible to adduce these results as proving that ‘human phthisis comes frequently from the butcher’s stall.’ The experiments that bear most directly on this point are those in which attempts have been made to ascertain the infective power of the carcase in cases of visceral tuberculosis by inoculating with expressed muscle-juice.” Do you agree with that?—I do not.
1159. Then he says at page 355,—“The above cited experiments appear to show that the danger of tuberculosis being communicated to human beings by the ingestion of meat from tubercular animals has by many speakers and writers been greatly exaggerated, and this view is strongly supported by the fact that in the great majority of cases of human phthisis the lesions indicate some other part of infection than the alimentary tract.” Do you agree with that?—I do not.
1160. I think in the course of the early part of my examination you agreed with me that you could not trace any case of

tuberculous disease from the stomach or from the alimentary canal?—I think not. May 28,
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1161. You do not agree with that?—No, I did not agree with that—the evidence is so slight. Dr. H. D.
Littlejohn.

1162. The experiments that have been made have been made with meat or flesh affected by tuberculous disease, or the juice of such meat?—Yes.

1163. Do you know of any person who has made this kind of experiment, taking the flesh of an animal whose lungs were tuberculosed and injecting it into another animal?—I cannot answer that, but there are gentlemen here present who will explain it.

1164. No doubt they will, but you never heard of that?—I cannot say at this moment that I have.

1165. So that no experiment has yet been made by inoculation or by ingestion which demonstrates the unfitness of the food in this case for human food?—Except by parity of reasoning from the effect of the food upon the lower animals.

1166. By reasoning, you mean by fallible men reflecting upon it?—We are all fallible.

1167. Has it been tried on the lower animals?—It has.

1168. That is, tubercular meat, but has the sound meat ever been tried on the lower animals?—I deny that it is sound.

1169. Has the meat, whether sound or not, been tried?—I believe it has.

1170. By whom?—I cannot tell just now.

1171. But you can give it to us to-morrow?—If I am here to-morrow I will.

Cross-examined by *Mr. Jameson*.

1172. Did you notice in the lungs of the cow a calcareous deposit in some of the tubercles?—I did not, but there may possibly have been.

1173. You did not attend to that matter?—I did attend to that matter. It was a chronic affection.

1174. Going on for a long time?—Yes.

1175. Was the disease not pretty stationary from the appearance of it?—Yes, I have no doubt it was.

Re-examined by *Mr. Comrie Thomson*.

1176. Apart from the more modern view which we have been talking about, would you have condemned that meat as altogether unfit for human food?—I have no hesitation in saying that, acting for a community like Edinburgh, I would have done so.

1177. Even although you were not to adopt the view that if there is any tuberculosis the whole animal should be condemned?—Yes.

1178. With regard to the bullock, if you were told that there was a deposit of tubercular matter in the lymphatic glands to any extent, would you have condemned the whole bullock?—I would not have had the slightest hesitation in doing so.

1179. That is, apart from the most recent and strict view?—

May 28, 1889. Apart from the most recent and strict view, if the gland was affected.

Dr. H. D. Littlejohn. 1180-1. You were asked about the lungs floating in water; what was the reason that you thought it unnecessary to apply that test?—I cannot imagine, with all my experience as a pathologist, any reason for adopting such a simple experiment. Every portion of the lungs would float in water, with the exception of the nodules themselves.

1182. And if the lungs were put into water, would the floating part of them support the nodules?—Undoubtedly, in a very free and buoyant manner.

1183. So that there is nothing in that test?—Nothing at all. I can imagine such an infiltration of tuberculous matter as to render the lungs solid, and then they would sink, but the animal is killed long before it reaches that stage in the majority of cases.

1184. But there is quite enough to float the lungs, nodules and all?—Yes.

1185. Then as to crepitation, did you think it necessary to apply that test?—I could not avoid doing so in handling the lungs, because I applied palpation to them.

1186. And you were satisfied that there was tuberculosis to a certain extent?—Yes. There was an incision made in my presence to allow me to judge of the character of these nodules in the lungs.

1187. That was in the cow?—Yes.

1188. Then, you say you are not able to put your finger upon any case in which it could be demonstrated that tuberculosis could be produced by ingestion; is there any reason why the bacilli should not escape the dangers of the canal and of the stomach, and find their way into the general system?—I see no reason at all.

1189. That is a question which depends a good deal upon the constitution and state of health of the person?—Quite so.

1190. A very vigorous person may destroy the bacilli before they get out of his alimentary system?—Such we believe is the case.

1191. And in other constitutions the bacillus gets the better of it?—Yes, if the constitution contains a nidus or nest for the deposit of the bacilli.

1192. Then that depraved corner forms a congenial soil for the bacillus?—Such we believe to be the case.

1193. And if he once gets to the general vascular system he propagates, does he not?—He does.

1194. And either he himself or his spores may be in all the portions of the body?—They may be carried everywhere.

1195. And a considerable time may elapse before the fact of their presence is made visible to the eye?—Undoubtedly.

1196. Therefore, is not the distinction that is drawn this, that whereas formerly you did not condemn those portions of the animal which were not visibly affected by the tuberculosis, you now find that it is your duty to condemn the whole portions of the animal, because there is a great risk that, although not

visible, they are all really affected by the tuberculosis?—Such is my opinion. May 28,
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1197-8. And that is the latest result of scientific investigation?—Dr. H. D.
Littlejohn.
Yes, and of practical teaching in our abattoirs.

1199. Then I may take it further that you still think that there has not been sufficient experiment to entitle you to say that this has been ascertained as an absolutely certain scientific fact, but as a practical man you think that in the interests of the public the benefit of the doubt should be given to the public?—
Undoubtedly.

1200. And that the risk is incurred in allowing any part of a tuberculosed animal to be sold?—That is my opinion as a practical man.

Adjourned till to-morrow at 10.30 a.m.

Wednesday, 29th May, 1889.

EVIDENCE FOR PROSECUTION—*continued.*

Archd.
Robinson.

Mr. ARCHIBALD ROBINSON, *sworn*, examined by
Mr. Comrie Thomson.

1201. You are a Fellow and a Member of the Royal College of Veterinary Surgeons?—Yes.

1202. Is that the London College?—Yes; there is no other.

1203. You are also foreign corresponding member of the Central Society of Veterinary Medicine of Paris?—Yes.

1204. For a number of years you have been examiner in cattle pathology for the diploma of the Royal College?—Yes.

1205. You are inspector under the Local Authority of Greenock for administering the Contagious Diseases (Animals) Act?—Yes.

1206. I believe you are associated with your father in that work?—I am.

1207. And you have an extensive practice over the west of Scotland?—Yes.

1208. I believe that one of the most famous veterinary schools in Europe is that of Lyons?—Yes, the first founded.

1209. And your professional studies were carried on partly there?—Yes.

1210. There is a well-known professor there, Professor Saint Cyr?—Yes.

1211. Had you the opportunity of witnessing the experiments and observing the investigations that that gentleman carried on?—Yes, both his experiments and the experiments of Chauveau as well.

1212. That was the man we heard of yesterday as having attended the Paris Congress?—Yes; he was president of it.

1213. Especially had you an opportunity of observing the experiments and investigations regarding the transmission by inoculation, and by ingestion, of tuberculosis from one animal to another?—I had, and from man to animals.

1214. And the development of the virus in the affected animal?—Yes.

1215. Have you since that time devoted a good deal of study and investigation to tubercular bacilli?—I have.

1216. Has that included microscopic investigation?—Yes.

1217. Have you formed an opinion as the result of this study and enquiry as to whether tuberculosis is communicable to man by ingestion of the meat of a tuberculosed animal?—I believe it is communicable. All the ascertained facts point to that conclusion.

1218. You feel driven to that conclusion by the facts that you have ascertained?—Yes. May 29,
1889.

1219. And that have been ascertained by other investigators?—Yes. Archd.
Robinson.

1220. Is the disease one that affects the whole system?—Undoubtedly.

1221. What do you call it technically?—A systemic disease.

1222. Tubercles are the characteristic manifestation of it?—Yes.

1223. Is it your belief that the disease has pervaded the tissue of the animal before the tubercles show themselves?—Yes, before you get naked-eye lesions.

1224. That being so, what is the conclusion at which you have arrived as to the period preceding the development of the visible tubercle?—That depends to some extent on the soil in which the tubercle is sown. The experiments of Professor Cornil lead us to believe that from the 18th to the 24th day you get tubercle developed by ingestion.

1225-6. The disease has been in the animal undeveloped so far as naked eye observation is concerned for that period?—On the sixth day there is a very slight visible lesion.

1227. Tuberculosis cannot be perceived until the carcase is more or less tainted by the disease throughout, is that so?—It is generally believed.

1228. But on the other hand, is it your opinion that the disease may be there, not having developed into tubercle, and for some period before it develops into tubercle?—Quite.

1229. Has any fact been ascertained as to the presence of bacilli which seems to you to make that clear? have bacilli been found in any part of the structure at an early stage of the disease?—As early as the 24th day, possibly earlier.

1230. You are aware that bacilli have been found in the marrow of the bone?—Yes.

1231. You have not seen that yourself?—Yes, I have.

1232. You have seen bacilli in the marrow of the bone?—I have seen it taken from the marrow of the bone in preparation.

1233. Can you tell at what time after the bacilli entered the system they were found in the marrow of the bone?—Probably earlier than the 24th day, because I believe that they are found somewhat earlier in the marrow bone than in any other parts. I think on the 24th day Cornil has shown bacilli from the intestines, and the probability is that in the marrow of the bone they would be seen earlier.

1234. Tubercular bacilli are seen in the intestines, distinguishing that from the lungs?—Yes, in the mucous membrane, and the digestive organs. It is there that the earliest lesion is found when the disease takes place by ingestion.

1235. It has been suggested to us that the progress of scientific enquiry does not show that the disease is communicable by ingestion, but that it is always or practically always communicated only by inhalation; what do you say to that?—The majority of the experiments go to show conclusively that the disease is

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 Archd. Robinson. easily communicated by ingestion, and the probability is that the disease is inhaled with much less frequency, because the sputum requires to undergo desiccation, and the bacilli require to be liberated to the atmosphere preparatory to being inhaled, and consequently the chances of infection are less by inhalation than by ingestion.

1236. Has experiment proved that the disease has been conveyed from the cow to man by milk?—There are observations which go conclusively to show that such is the case.

1237. And have fowls been found to be a means of communication?—Dr. De Lamallerèe relates a case of consumption caused by eating fowls.

1238. Is that case mentioned in the blue book?—I cannot say, but I took a note of it at a sanitary congress, at which a paper was read on the subject. The question was whether there was any evidence of tuberculosis from ingestion on the human subject, and Dr. De Lamallerèe related a case in point in which the evidence was very conclusive, not only of the human being being infected by bacillus from the fowl, but also the human subject having given rise to infection in her husband, so that the disease was not only communicated from the fowl to the person, but from person to person.

1239. That was the case in the book, of a soldier's wife?—Yes, the same.

1240. Has the identity of this disease, tuberculosis in animals, with phthisis in man been established?—Thoroughly. There are very slight morphological differences in the appearance of the bacilli, but these are only due to the difference of the soil in which they are developed.

1241. Morphological in form?—Yes.

1242. And the germs that are propagated in the different types become identical?—Yes.

1243. Are these last conclusions which you have given us the result not only of reading, but of your observation of the experiments that were made at Lyons?—Actual observations.

1244. I believe that, for good or evil—we will not say which,—they are not hampered at Lyons by any Vivisection Act?—They are not.

1245. And the experiments are carried on with greater freedom there than in this country?—Yes.

1246. You returned from the Continent about 1874?—Yes.

1247. And since that time have you, in the prosecution of your own professional work, been investigating independently?—Yes.

1248. Have such investigations as you have been able to prosecute confirmed these views?—Entirely.

1249. That being so, when you were appointed to be inspector by the Local Authority of Greenock you expressed your opinion as to what should be done with the whole carcase of any animal affected with tuberculosis?—Yes, I did.

1250. What was that?—I recommended the Local Authority to empower me to destroy the animals suffering from tuberculosis,

no matter to what limited extent, and to be totally destroyed and their organs as well. May 29, 1889.

1251. Prior to that time had the practice in Greenock been that all carcases except those in which the disease was apparently confined to a limited area were condemned totally?—Yes. Archd. Robinson.

1252. But in the other cases all the internal organs were destroyed merely, and the carcases were passed?—Yes.

1253. You raised your voice against this practice as being hazardous to human life and health?—Yes, and incompatible with what was known even at that time.

1254. In 1874?—Yes.

1255. I presume, like all reformers, you met with some opposition?—Yes, considerable.

1256. But that opposition died away?—It did.

1257. Did you succeed in seeing your views given practical effect to?—Yes.

1258. And since that time has it been the practice to destroy the whole carcase?—Yes, since 1874.

1259. And the butchers there have practically acquiesced?—Yes, with one exception.

1260. Had he to growl and submit?—No; he threatened me with legal proceedings for unlawful seizure.

1261. But he did not bring that action?—He did not.

1262. There was an outlet, I suppose?—I altered the system then. I saw that I was probably not acting in the most legal fashion, and I advised the inspector, Mr. Mackay, one of your witnesses, to bring into force the 26th section of the Public Health Act, and to act upon my certificate.

1263. That is the section under which we are now?—Precisely.

1264. Had you been under the Police Act before?—Yes. I simply had the authority from the magistrates to do what I thought proper with these carcases.

1265. Since the inspector acted under the Public Health Act your view has been given effect to, and the whole carcase of any affected animal has been condemned?—Yes, and we have met with no opposition.

1266. Has this policy of total destruction which you inaugurated in Greenock, and which has been carried out for many years, been enforced in Paisley also?—I understand so.

1267. Leaving that general part of the case, I wish you to say whether, after your practical experience, and also your study and investigation, you have had these opinions which you formed many years ago confirmed, and whether you now, looking back upon all you have learned, are prepared to advise the Court that it is a hazardous thing for the health and life of the community to allow any part of a tuberculous animal to pass into food?—That is decidedly my opinion.

1268. On the 9th of May, were you shown the two carcases in question—a cow and a bullock?—I was.

1269. In Moore Street slaughter-house?—Yes.

1270. They were shown to you by the inspectors?—Yes.

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Robinson.
1271. Did you examine them carefully, and did you remove certain portions for microscopic investigation?—I did.
1272. And you prepared a report?—Yes.
1273. Have you got it here?—Mr. M'Phee has it.
1274. (Shown report now produced and marked No. 7).—That is my report.
1275. Is it true and correct?—I believe so.
1276. In your opinion, were either of these carcasses fit for human food?—They were not.
1277. The bullock was in better condition than the cow?—It was.
1278. Take the cow first—I don't think you mentioned this in your report—and give me your opinion, apart from your special view, your more enlightened view, as to the propriety of destroying the whole animal however slight the affection may be; assuming that you were not to take so strict a view, would you have passed that cow?—No.
1279. Would you have passed the bullock?—No.
1280. Apart from the view that you have adopted, and if you had taken the less strict view and removed what was apparently affected and passed the rest would you have passed either of those carcasses?—No, nor any portion of them.
1281. What part of the body, do you remember, did you take as specimens for microscopic treatment?—The anterior portion of the diaphragm and the dorsal part of the left lung—I think it was the left. I also took some of the mesenteric glands from the alimentary canal.
1282. These were the portions of the animal you removed?—Yes.
1283. Which animal was it?—The bullock.
1284. What did you find upon microscopical examination?—I found a quantity of giant cells—proliferation of the glands.
1285. What is proliferation?—A giant cell is a multiplication of the ordinary cell, and proliferation is a fresh crop.
1286. You found giant cells?—Yes.
1287. What does that suggest?—It suggests the presence of tubercles histologically.
1288. Then, besides that you say that there was a multiplication, a repeated bi-section and tri-section of the lymphoid cells?—Yes.
1289. What does that suggest?—It suggests irritation of the parts.
1290. What is the meaning of histological?—It means minutely anatomical.
1291. A histological preparation is what you prepare for microscopical examination?—Yes.
1292. "Histological" is used by you in your profession as meaning minute anatomy performed by the aid of the microscope?—Yes. It includes that—for microscopical investigation.
1293. What else did you see?—A number of the bacilli.
1294. Tubercular bacilli?—Yes.
1295. Were you quite clear that that was what you saw?—

Yes; there were no other bacilli of the same dimensions and character. May 29, 1889.

1296. Did that satisfy you as to what the true cause of these nodules or tubercles was?—Yes. Archd. Robinson.

1296-1. What was it?—The presence of these bacilli.

1297. And therefore that they were the result of tubercles?—Precisely.

1298. These portions that you removed were removed from both animals?—I took portions separately from each animal.

1299. Did you find these appearances in the portions taken from both animals?—I did, but the lesions were not identical in both.

1300. Did you find evidence that the disease was tuberculosis?—Yes, certainly.

1301. Did you find giant cells in both?—Yes.

1302. And bacilli in both?—In both.

1303. It is a question of degree in each case?—Yes.

1304. You were present at the Paris Congress last year?—Yes.

1305. And took part in the proceedings?—Yes.

1306. Do you agree with the resolutions that were passed by that Congress?—I think I materially assisted in getting them passed.

1307. And you agree with them?—Yes, certainly.

1308. Did various celebrated French scientists take part in the discussion?—Yes.

1309. It is stated in the journal that the resolution was carried with three dissentients—do you remember how many voted altogether?—Between 200 and 300. There is a report in the *Herald* to-day which puts down the number of members attending the Congress at 80, but I think it was nearly 300.

1310. That was quite correctly reported, but can you tell me how many people took part in that vote?—I think there were almost the whole of the members of the Congress, and I think they would vote to a man, with the exception of one or two.

1311. Do you think they would amount to 200 or 300?—Certainly—at least.

1312. We got it out of the report that there were 80 members in Congress?—That was quite a mistake. I have a report of the Congress, and a list of the members attached, and I am not sure whether there were not over 300.

1313. I know we did not imagine it, and the newspapers are quite correct.—I think we got it from Dr. Russell.

1314. *Dr. Russell.*—It was from counting the roll of the Congress at the beginning of the report—the actual people present. I had the French official report.

1315. *Mr. Comrie Thomson.*—And these were the permanent members of the Congress?

1316. *Dr. Russell.*—Yes.

1317. *Mr. Comrie Thomson.*—(To witness) But you say that there were between 200 and 300?—Yes.

1318. And these were all men interested in the question?—They were scientists from every part of the world. I rather

May 29, 1889. suspect that the smaller number refers to another body existing at present in France, called the "Œuvre de la Tuberculose."

Archd. 1319. Or perhaps, as the learned Sheriff suggests, there was a permanent association in Paris, under whose auspices this Congress was convened?—I don't know.

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1320. But we have the fact, and I should like to be quite certain as to its accuracy, that this body voted in a body of between 200 and 300?—Yes; at least.

1321. Scientists from every part of the world?—Yes.

1322. And only three differed from the resolutions that were passed?—Yes.

1323. You regard the resolution passed by such a body—and I should like the opinion of the medical world upon it—as marking a very important epoch in this matter?—Yes, undoubtedly.

1324. Before I leave that, I suppose it is, along with the report of the Departmental Committee that I am coming to, the most recent expression of learned opinion upon this subject?—Yes, undoubtedly, followed by the Government decree.

1325. You have also perused the report of the Departmental Committee?—Yes, or the bulk of it.

1326. July 10th is the date of the report of the Privy Council Committee?—Yes.

1327. And 31st July is the date of the vote in France?—Yes. I read an extract from that to the Congress.

1328. Was the report of the Privy Council Committee out before your meeting in Paris?—Yes, immediately before it, I believe.

1329. Did they consider it?—I brought it before their notice, and gave them the result that had been arrived at.

1330. So that the Paris Congress had before it the result of the Privy Council Committee's investigations?—Yes.

1331. You generally approve of and endorse the conclusions arrived at by the Privy Council Committee?—I do, generally.

1332. I particularly wish to refer you to paragraph 61, in which the Committee say:—"The relative frequency with which "the disease appears among fowls seems to be not generally "known, except to veterinary surgeons of large cities. Both "from direct experiment and from clinical observation it is now "proved, not only that the fowl contracts the disease from man "by reason of its swallowing the expectorated bacilli, but also "that it thereby forms a vehicle for the further transmission of "the disease to man and the lower animals." I also refer to paragraph 65:—"The two points to be borne in mind in considering remedial measures are—(1) that the disease can be "transmitted to man from the lower animals, and from man to "the lower animals by one or other of the methods which we "have already discussed, and especially by the ingestion of tubercular diseased meat or milk; (2) that it spreads from animal to "animal." I refer you also to paragraph 21, in which it is said, "The bacillus tuberculosis has been proved to enter the body, "and to kill the animal by causing the growth of tubercles, in "the following ways:—(1) Inhalation—into the air passages

“and lungs. (2) Swallowing—into the alimentary or digestive system. (3) Direct introduction—into the sub-cutaneous or sub-mucous tissue by means of a scratch or cut or sore in the skin or mucous membrane. It is also supposed to be directly transmitted by—(4) Heredity.” And I also refer you to paragraphs 24 and 25:—“Swallowing.—Numerous experiments have similarly been performed upon the possibility of the tubercular virus entering the body through the alimentary canal. In these experiments, tubercular secretions, *i.e.*, mucus, saliva, milk, &c., portions of tubercles from diseased tissues and cultures of the bacilli have been swallowed by various animals (calves, pigs, sheep, rodents, fowls, &c.), with the effect that the disease has fatally followed the ingestion of such infective material. It is obvious, therefore, that the digestive fluids do not necessarily exert an injurious influence upon the poisonous bacilli.” Do you agree with these views?—I do.

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1333. I also refer you to paragraphs 43 to 46:—“The distribution of the disease and the bacilli in the body closely affects the question of the use of tubercular meat as food. It appears that the marrow of the bones is affected at an early period, and that the bacilli may be present therein in considerable quantity before they discover themselves by changes obvious to the eye. Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs. Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals.” Does that express your views?—Entirely.

Cross-examined by *Mr. McKechnie*.

1334. You say that eminent scientific men of all nations were at the Congress?—I believe so.

1335. You believe so; don't you know so?—The situation of their residences indicated that they came from all parts.

1336. Were you the only Scotsman present?—Really I cannot say.

1337. Did you see any other Scotsman?—I saw the name of Dr. Coats there, but I did not see him personally.

1337-1. You saw him on the list?—Yes.

1338. You did not see him at the Congress?—I did not.

1339. Did he take any part in the discussion?—Not that I know of.

1340. You call this French body a Congress?—Yes.

1340-1. You are not yourself a member, are you?—I am.

1341. I thought you said you were a corresponding member?—That is for a different thing altogether. I am corresponding member of the Central Society of Veterinary Medicine of Paris.

1342. And you were a member of this Congress?—Yes.

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1343. You were yourself rather reluctant to speak?—Yes, I did not go there to speak. I find difficulty in expressing myself in my native language sometimes.
1344. But you did speak?—Yes.
1345. And you brought a blue-book with you to the Congress?—What I got was the report that your learned friend read from just now. I got it sent by one of the Privy Council Department, and from that I read extracts.
1346. When did you get that report?—I don't have the date, but it would be perhaps the 26th or 27th or 28th of July—during the sitting of the Congress.
1347. Was it sent to you in Paris?—Yes.
1348. You sent to the *Veterinary Journal* yourself a report of the proceedings of this Congress?—I did not.
1349. You did not?—No, I did not. I contributed a synopsis to the *Scotsman* and the *Herald*, but to no other paper. The other reports may have been got from these papers.
1350. I see that the report says that “the President called upon Mr. Archibald Robinson of Greenock?”—That is so. The President was an old teacher of mine.
1351. Who was the President?—M. Chauveau.
1352. And you had seen him make experiments some years before in Lyons?—Yes.
1353. Was that why he called upon you?—In all probability.
1354. And you proceeded at once to state to the Congress the experiments which you had seen the President make?—I don't know that I did that, but I referred to them.
1355. But you did it?—Yes.
1356. All the experiments you saw made at Lyons were made in 1873 and 1874?—Yes.
1357. Did you ever see the tubercular bacilli before that date?—I did not see them then; they had not been seen by anyone, but I had seen the histological condition.
1358. What did you see in the histological condition in 1873 and 1874?—The giant cells.
1359. You put down those to tubercle?—I don't know that it should be absolutely put down to tubercle, but they are a feature of the tubercular lesion.
1360. You did not know that in 1874?—Yes, we knew that they were an invariable feature.
1361. Did you find any bacilli in 1873 or 1874?—Nobody had.
1362. And yet you made careful experiments?—Yes.
1363. And it is the result of the experiments which you did afterwards in Greenock?—We had an intuitive idea that there were such things.
1364. That is to say that you, by intuition in Greenock, knew what Koch discovered by science in 1881?—There was a micro-organism. I had that intuition. I believe that for a century there was an intuition that most of these diseases were due to micro-organisms.
1365. Who held that?—It was very shortly after that that Toussaint demonstrated that there was a micro-organism.

1366. Give me the name of anybody in 1874 who published the intuition that you had?—I believe that Laennec did. The idea was published in a published work. May 29,
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1367. When was that?—In the last century. Archd.
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1368. And you were going on last century's science when you returned to Greenock and adopted this course?—Scarcely. I was going on what I had seen.

1369. But you had not seen it?—No, but I had seen the effects.

1370. And you guessed by intuition that it must be there?—I thought so by intuition.

1371. You saw then the mesentery?—Yes.

1372. What did the experiments of your teacher demonstrate these appearances to be?—Caseating glands generally.

1373. Caused by what?—The presumed presence of a parasite.

1374. And that is all you could make out?—At that time Chauveau thought that it was due to some granular change in the tissues.

1375. Not to any organism at all?—No, but a latent vitality in the granular change in the tissues.

1376. But did you believe him?—No, I did not. I believed that life proceeded from preceding life, and that it must be something living.

1377. How old were you in 1874?—I would be 21, I think. I was born in June, 1854.

1378. So that you would be 20, and you took leave to differ with your teacher about this matter?—I did not differ, but I had my own idea.

1379. And your father's practice, until you returned from Lyons, was to condemn only the portions affected by disease?—It was so.

1380. And you convinced the old gentleman that he was wrong?—Yes.

1381. When?—As soon as I had told him the result of the experiments which were performed in Lyons.

1382. Did you tell him that Professor Chauveau thought that it was due to granular generation?—Yes.

1383. And that you did not believe the Professor?—Yes, I said I thought he was wrong.

1384. And your father elected to follow you, a young gentleman of 20, rather than the Professor?—Apparently.

1385. When you were studying at Lyons in 1873 and 1874, what was the practice as to condemning animals affected with disease?—I believe it was partial condemnation.

1386. And those responsible for the public health there acted upon that while you were there?—I believe so.

1387. But you, as a young gentleman of 20, did not approve of that?—No, and I do not do it yet.

1388. How early had you begun to suspect that the flesh of animals partially diseased should be destroyed?—About the time of which you are speaking.

1389. You had gone to Lyons, and you did not believe your teacher; where did you get your creed—where did you learn

May 29, 1889. that life must come from life,—when did you first learn that?—
That is apart from the question.

Archd. 1390. It is not apart from the question, because it is my ques-
Robinson. tion, and you will answer it?—I could not tell you; I could not
define it.

1391. Had you a dawning of it when you were ten years old?
—I cannot say; it is quite impossible.

1392. In Greenock nobody opposes what you do?—They do not.

1393. Do they get compensation?—They do not.

1394. Have they asked compensation?—They have not asked it.

1395. You sometimes make mistakes?—I suppose so.

1396. Is it not the fact that you condemned a sound bullock
as unfit for human food, belonging to Mr Sheridan, and seized
it, and caused it to be slaughtered, with a view to the destruc-
tion of the carcase, and that you had to admit that you were
wrong and pay the price of the animal?—No, that is not correct.
I did not kill the animal on the assumption that there was
any tuberculosis. I have a recollection of the case to which
you refer. I did not pay any compensation, but the man was
compensated by the Perth Local Authority. The animals were
in transit from Ireland, and I was asked as inspector for the
different counties to examine them. If I saw anything suspicious
about animals I was to ask for the slaughter of them. The
animals had a rough passage the night before, and this animal
showed symptoms of chest disease, with an elevated temperature.
It was suspected that it was pleuro-pneumonia, but it was a pure
case of bronchial pneumonia. By mutual arrangement we got
the animal killed.

1397. Do you mean arrangement with Mr. Sheridan?—Or his
representative; I cannot say.

1398. You condemned the animal for pleuro-pneumonia, and
you were mistaken?—I did not condemn it for pleuro-pneumonia.
I stated that it had a chest affection, and that it was not pleuro-
pneumonia.

1399. But you seized it for that?—Yes.

1400. And you were wrong in seizing it?—Yes.

1401. And what misled you about that animal was that it had
had a rough passage from Ireland?—Yes, and an elevated tem-
perature.

1402. Caused by the rough passage?—Yes, and possibly by a
long drive before that.

1403. May I take it that hard driving of animals is apt to
produce some appearances in their chest?—Yes, but not just a
specific disease.

1404. I have not asked you about that—have you heard of
inflammation?—Yes.

1405. Is it apt to produce inflammation in the chest?—
Yes.

1406. I should think congestion of the lungs is a very specific
disease?—No, it is not; it is not produced by any special
organism.

1407. It requires no bacillus?—No.

1408. And inflammation is no specific disease?—Not necessarily. May 29,
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1409. But over-driving may produce either of these diseases?—
Either congestion or pneumonia. Archd.
Robinson.

1410. You say that you observed symptoms of proliferation?—
Yes.

1411. You found the bacilli there?—Yes.

1412. The tubercular bacillus has, I understand, specific qualities?—Yes.

1413. And appearances?—Yes.

1414. What are those?—Small rod-shaped organs. Under a very high magnifying power they show some clear spots, which are presumably the spores of the bacillus.

1415. Was it upon that you went when you said you found bacilli present in this proliferation?—Yes.

1416. Did you pay no attention to the colour of the bacillus at all?—The bacillus takes on the colour of the stain.

1417. But did you try it?—Yes.

1418. When?—Immediately after taking it home.

1419. Who was with you?—Dr. Lawrie.

1420. Is he to be here?—No, but he can be brought.

1421. Did you try Koch's test to see if these were bacilli of tuberculosis?—No; I did not try his test.

1422. Are you aware that Koch first discovered them by a specific test?—Yes.

1423. And was able only by that test to set them apart from other bacilli?—Yes; but there are numerous other stains by which they have been tested by others.

1424. Are you aware that Koch holds that unless you take the particular stain from his test you cannot call them the bacilli of tuberculosis?—I am not aware.

1425. There are bacilli in all specific diseases?—No; I don't say so.

1426. There are bacilli of many diseases?—There are micro-organisms in all diseases which are not necessarily bacilli.

1427. Is a bacillus a vegetable or an animal?—It is supposed to belong to the schizomycetis, which is supposed to be a vegetable.

1428. What do you regard as the difference between a microbe and a bacillus?—There is not necessarily any. "Microbe" is a generic term, and "bacillus" is special to several diseases. The word "bacillus" simply means a rod.

1429. *Mr. Comrie Thomson.*—At this point might I ask you what are bacteria?—There is a little confusion in our nomenclature with regard to that. "Bacteria" is a sort of generic term which has been used in Great Britain, and it is more particularly confined on the Continent to rounder forms of organism, but in this country we have been in the habit of calling a micro-organism, capable of producing a disease, a bacterium.

1430. *Mr. McKechnie.*—You say that this disease can be communicated from animals to man?—Yes, in my opinion.

1431. And you say also that the bacillus may lie latent in the

May 29, 1889. animal from eighteen to twenty-four days?—Yes, it is believed to do so experimentally.

Archd. 1432. During that time the disease is in a state of incubation, Robinson. and the animal is suffering more or less from fever?—Generally; but the fever is slight, as a rule.

1433. If you get an animal before the eighteenth or twenty-fourth day, that animal may be affected with the bacilli?—Yes.

1434. They are in the system?—They are.

1435. You cannot see them?—Not necessarily.

1436. Does anybody think of looking for them unless you see a tubercle?—No.

1437. You do not?—No.

1438. Would the food be less dangerous then than afterwards?—That is very questionable.

1439. Would it not be dangerous because the bacilli have not come to the surface through the tubercle?—I don't know that it would be. I don't know any experiment about that. It would be dangerous in my estimation.

1440. So that we may be eating uncondemned food full of bacilli, in which tubercle has not been developed?—That is possible.

1441. And that cannot be condemned?—No, there is no evidence on which to act. You cannot condemn a thing unless you have evidence of it; you cannot honestly do so.

1442. But even dishonestly you cannot do so?—No.

1443. Would you do it at all?—No.

1444. Do you believe in the germ theory?—I don't know that I believe in everything in connection with the germ theory, but I believe in the principles of the germ theory.

1445. Do you believe that bacilli are taken in largely by inhalation?—In certain circumstances—not in that special class of disease.

1446. You think that the tubercular bacilli do not get in by inhalation?—They can, perfectly well; but I mean to say that, for one case that you get as the result of inhalation, perhaps you get fifty or sixty cases of ingestion.

1447. How is it that, according to this report of the Privy Council, which you swear by and adopt, the bacilli of tuberculosis are so often found in the air-passages and lungs?—Allow me to draw your attention to the fact that we are talking of disease in cattle, and not in the human subject.

1448. So were the Commissioners—"The bacillus tuberculosis" has been proved to enter the body and to kill the animal in "the following ways—first, by inhalation"?—Well, I disagree with that.

1449. The Commissioners are wrong there?—I have no right to pass any judgment.

1450. You have a perfect right?—My impression is that that is the least usual way in which animals become infected. It has been tried over and over again, and numerous experiments have been made to induce tubercles in the lower animals by inhalation, but they have all failed—every one of them.

1451.—It comes to this, then, that you don't agree with the Privy Council Commissioners when they say, "The bacillus of tuberculosis has been proved to enter the body—first, by inhalation into the air-passages and lungs"?—I agree with that, but not prominently so. I believe that the bacillus is perfectly capable of being inhaled, but only under certain circumstances.

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1452. *Sheriff Berry*.—You believe that is a less common mode of it being introduced into the body than by ingestion?—Yes, precisely.

1453. *Mr. M'Kechnie*.—Look at paragraph 22 of the report of the same Commissioners:—"Owing to the fact that the signs of disease are most commonly found in the lungs, inhalation would appear to be the commonest way in which the disease is contracted;" do you agree with that?—No, I don't agree with that; but the fact of the disease being found in the lungs is not necessarily conclusive that the bacillus has been inhaled. Experiments show that it is not conclusive.

1454. The Commissioners say at paragraph 23: "Co-habitation, therefore, of the diseased and healthy animals is a fertile source of spread of the malady."—I agree with them there.

1455. That means the animals living together in byres?—Yes.

1456. Do you know that one gentleman before the Commission said that an animal could take this disease if it was within 30 yards of an animal suffering from it?—I don't believe that, suppose two animals were standing side by side, one of them would take it from the other by the breath of the other, and I think by co-habitation it is by the coughing of the sputum.

1457. Have the lower animals sputum? do you believe that?—I do, certainly.

1458. Would you be surprised to hear that pathologists are of a different opinion?—It is possibly a misapplication of the term. They do not spit as we do.

1459. And spitting is sputum?—But they have the same material to dispose of.

1460. They have got the bacillus?—They have the mucous substance, and they cough it up.

1461. Coughing it up puts it into the air?—Yes.

1461-1. And other animals in the same byre take it?—Yes, but I don't think they do so directly. I think it must be desiccated.

1462. If the disease is not most commonly got by inhalation, how do you account for the fact that it is most commonly found in the lungs or the neighbourhood of the lungs of animals?—It is very simple.

1463. How?—Because the infection travels along the alimentary track, and from that into the thoracic duct, and then into the blood, and the blood takes it into the lungs.

1464. Your opinion is that the bacilli get in by ingestion?—Yes, I say principally, but I don't say it is the only mode.

1465. It is carried direct to the stomach as a man is taking his dinner, if he has animal food there?—Yes.

May 29, 1889. 1466. Has nature made no provision for the destruction of the bacilli in the stomach?—Yes, it provides the gastric juice.

Archd. Robinson. 1467. And the gastric juice will make it hard work for your bacillus?—Yes.

1468. At what temperature will a bacillus fail to live?—The majority of bacilli take a temperature of 212° to destroy them, and that possibly requires to be prolonged, but not the spores.

1469. Are you aware that the Commissioners that I have been referring to say in paragraph 7, "Though, however, cold thus prevents its development, it does not kill it, whereas if it be kept at a temperature of about 107.5° Fahr. for several weeks, the organism gradually becomes exhausted and dies." Do you agree with that?—Yes, I believe that is correct.

1470. Do you believe that if the food was boiled at the boiling point and cooked in that water, the bacillus would not be killed?—The probability is that it would be killed.

1471. And roasting the meat would have the same effect?—No; a roast is sometimes not above 60° .

1472. But when people come to know your evidence, it will be killed?—It is very likely.

1473. If the food of an animal that has had tuberculosis about its lungs or membranes is properly cooked by boiling or roasting, and then subjected to the acids in the human stomach, do you think there is any danger of tuberculosis being communicated through that food?—The bacillus would have a very bad chance, I think.

1474. You would not be much frightened to eat such food yourself?—No; I don't believe I would. I would prefer to eat it if there were no bacilli, and I would be desperately hungry to make a meal of it.

1475. But you would eat it?—Yes.

1476. And these are the conditions under which people in this country take animal food?—No; that is not my experience. I was never in a restaurant yet and got food that had no blood in it.

1477. But you took it?—Yes. I have a good constitution, however, and can resist the danger to some extent.

1478. Have you ever known of a case of infection in the human subject through the alimentary canal?—Dr. Bang of Copenhagen reports one. He did so either at the Congress or in some journal.

1479. Can you give me a reference?—It was a child of six months old who died of tuberculosis—from *tabes mesenterica*.

1480. Did he die of both?—No; he died of that form which is called *tabes mesenterica*.

1481. But you don't answer my question. My question is, have you come across a case or ever heard of a case or read of a case in which a human being died of tuberculosis brought into his stomach through the alimentary canal alone?—This case which I am giving you is one in point.

1482. What is *tabes mesenterica*?—It is a form of tuberculosis.

1483. But my question confined you to the stomach and alimentary canal?—And this is presumably so.

1484. Do you mean to tell me that in that case the disease was communicated through the alimentary canal alone?—Yes, the evidence was such.

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1485. Alone through that?—So far as we can judge—entirely from the consumption of milk.

1486. *Sheriff Berry*.—Was there any evidence in that case as to how the child contracted the disease?—The parents of the child were healthy, and had been so for some generations.

1487. On what ground was it supposed that the child took this disease, *tabes mesenterica*?—Because the child had been nourished by the milk of a cow whose udder was found to be tubercular.

1488. *Mr. McKechnie*.—That was a case from milk?—Yes.

1489. Milk is much more dangerous than meat?—Yes, I daresay it is—I don't know how much.

1490. You do know how much—you know that they drink milk without boiling it?—Yes.

1491. And if you take milk from a tubercular udder, the milk is bound to be full of bacilli?—Yes.

1492. And they swallow them?—I don't know that it is done frequently.

1493. Not with malice aforethought?—I daresay that when there are 40 or 60 cows in a byre, and when the milk comes to be mixed, the bacilli are not nearly so prevalent as one would imagine, because we have no evidence that *bacillus tuberculosis* developes in milk.

1494. But it may be present in milk?—It may be.

1495. And one good healthy fellow into your lungs would do the mischief?—Yes, possibly; but the bacilli have a tendency to sink, and there may not be nearly so many of them ingested.

1496. The case you have given me now was milk, and I thought that you understood my question to refer to disease caused by the eating of animal food cooked in the ordinary way. Have you ever heard of a human being who got the disease in that way?—No; I don't think it is competent to make an experiment for it.

1497. You think that a person might die if you experimented on the alimentary canal?—Yes.

1498. And science could kill him in that way?—Yes.

1499. But not by the meat eaten at table?—No, it is quite impossible to give you a case.

1500. You told me that you read the bulk of the report of the Commissioners upon tuberculosis, and my friend read to you article 45—you told us that you read the blue book?—Yes, the most of it.

1501. That is a creditable piece of industry?—I will finish it, if I am spared.

1502. Will you refer me to a passage which justifies the Commissioners in saying what they say in paragraph 45—"Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried

May 29, 1889. "in the interior of the limbs?"—No, I believe not. I have not come across that.

Archd. 1503. So far as you have read the evidence, you would not
Robinson. yourself have come to that conclusion?—I would not; that is to say, I would not have said so.

1504. You would not have published that?—No; I would not—not without some definite information.

1505. You told me that you were aware of, or you yourself found, bacilli in the bones of animals?—In the marrow of the bones.

1506. You know quite well that there are many bacilli?—Yes, various kinds.

1507. Can you say that the bacilli you found in the bones of animals were the bacilli of tuberculosis?—I can say so.

1508. How?—Because they have all the morphological appearances.

1509. Did you apply Koch's test to that?—No; I don't know that I did. I don't think Koch's is the only test.

1510. Koch is a very poor authority, but he found this out?—He is not a poor authority.

1511. Whose test did you apply?—Several,—Beck's test of magenta.

1512. Who is Beck?—Really I have not investigated the biography of all the people who write on microscopes. He is probably the same man who is a microscope maker.

1513. You prefer the test of a man of whom you know nothing to the test of one of the greatest scientists in Europe?—No; you are quite wrong. I prefer Beck's test because the results are more rapid.

1514. But the other is more certain?—I question if it is.

1515. Are you prepared to swear that those bacilli might not have been the bacilli of some other disease that affects the bone?—I am quite prepared to say that they were the bacilli of tuberculosis.

1516. You know such a thing as caries of the bone?—Yes; it is death.

1517. What causes it?—Very often the arrest of the nutrition to the part. If you tie up an artery that goes to supply a bone, it may cause the death of that bone.

1518. It may be caused by disease that may come to man?—Yes.

1519. Or hereditary?—No; I do not know.

1520. Are you aware of any disease but tuberculosis that would cause that?—Tuberculosis does not cause that.

1521. In this case you saw the bacilli in the marrow of the bone; was the bone itself quite healthy?—I did not see the bone.

1522. You only saw the marrow?—I only saw the slides prepared from it.

1523. Where?—In France.

1524. When?—In 1886, I think.

1525. And you were told that these bacilli were taken from the marrow of bones?—Yes.

1526. I thought you said that you saw it yourself?—That is seeing it myself. May 29,
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1527. What I took down was, "I am aware that bacilli have been taken from the marrow of the bones"?—Yes. Archd.
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1528. Although you said you were aware of that, you now mean that you saw them in a laboratory in Paris?—Yes.

1529. You know nothing of the history of the animal?—No.

1530. Or of what the animal died?—No.

1531. You know what struma is?—Yes; I know what is generally called struma.

1532. Is it the same disease as tuberculosis?—Yes; it is supposed to be.

1533. Is it?—I believe it is. It is usually called scrofula.

1534. And tuberculosis is usually called consumption?—Yes.

1535. Is there no distinction between them?—No, I believe not; but bacilli in scrofula are not so virulent as bacilli in tuberculosis.

1536. But if you have bacilli in scrofula these will be in the bones?—Yes, or the glands.

1537. Is the distinction between the two not this, that where you have struma it is an affection of the glands, joints, and bones?—Yes.

1538. And tuberculosis is an affection chiefly of the lungs?—Yes, the same disease in different situations.

1539. Are the bacilli in struma and tuberculosis morphologically the same?—I believe so.

1540. But can you say so?—No, I cannot.

1541. Are you therefore unable to distinguish between the bacilli of struma and those of tuberculosis?—I have not compared them.

1542. You are unable to compare them?—Yes.

1543. And the particular bacilli that you saw which came from the bone may have been the bacilli of scrofula?—Quite possible, which would be the same thing.

1544. Do you think that consumption and scrofula are the same thing?—I believe so, and lupus is the same thing.

1545. Are you familiar with Koch's writings?—I cannot say that I am familiar with his writings, but I have read a great deal of what he has written.

1546. I read to you from an essay published in 1884 on the "Etiology of Tuberculosis," in which he says on p. 191, "Another point of importance to remember is that tuberculosis in animals used for food, especially *perlsucht* in cattle, remains more or less localised, so that there would be no danger except in eating the tubercular lungs, glands, &c." Do you agree with that?—No; certainly not.

1547. Do you think Koch is wrong about that?—I think so.

1548. Is he not the most eminent authority on this subject?—No, I would not say so; he is one of them.

1549. Who do you put next to or above him; do you put the gentleman at Lyons, M. Chauveau, before him?—Yes.

1550. You did not agree with him?—On one occasion.

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1551. You have told us that this disease can be communicated by inoculation; have you ever seen it from inoculation from flesh which was not in itself tubercular?—I have not seen that experiment.

1552. That would be a very important experiment?—Yes.

1553. Why did you not make that experiment, because that is the very question?—Because in the first place I have not the slightest wish to pay a penalty of £20. I don't wish to conduct any experiment till I can do so legally, or I would have conducted very many before this time.

1554. To whom would you pay a penalty of £20?—I don't know.

1555. Do you refer to the Vivisection Act?—Yes.

1556. *Mr. Comrie Thomson.*—The Advocate Depute would order a prosecution.

1557. *Mr. McKechie.*—The Advocate Depute would order no proceedings. (To witness) Are you aware that a well-known and respectable person like yourself can get a license?—No, I am not aware, but I am aware that there is a good deal of trouble.

1558. You have read about the experiments of other people?—Yes.

1559. And there are people experimenting on live animals?—Yes.

1560. Can you give me any reason why they don't use flesh such as is in dispute in this case for their experiments instead of flesh affected with tubercles?—That has been done.

1561. By whom?—By Toussaint, first of all. It was he who originated it as far back as 1878.

1562. With what result?—With the result that he had some negative and a good many positive results.

1563. Can you give me anybody else?—Yes, Galtier, also of Lyons, Peuch, I believe of Lyons, Arloing of Lyons, and Nocard of Paris, most of whose experiments were in favour of your argument, and I think I could mention some others.

1564. That was done upon animals with flesh not in itself tubercular?—Not apparently.

1565. But the bacilli might have been there?—Yes.

1566. And in those cases the flesh used was raw flesh?—Not in all Toussaint's.

1567. But in the majority of cases was it raw flesh?—I believe it was, with the exception of Toussaint's experiment with a temperature of 75° or 80°.

1568. Has anybody experimented with flesh in this case not in its raw state but roasted, boiled, or stewed?—I believe Toussaint did that.

1569. Do you know?—I have read that he did it.

1570. Where shall we find that?—I cannot say just now, but I think in the "*Receuil de Médecine Vétérinaire*."

1571. Do you know the journal called the "*Journal of Comparative Pathology and Therapeutics*?—Yes, edited by M'Fadyean.

1572. Do you know that out of forty animals inoculated with the juice of tubercular cows only one became tuberculosed?—I think that refers to Nocard's experiment. I believe he was in that fortunate or unfortunate position.

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1573. This *Journal of Pathology and Therapeutics* mentions an experiment of Nocard's in which he inoculated "guinea-pigs by "intra-peritoneal injection of muscle juice (raw) from eleven cases "of generalised tuberculosis in cows. Each guinea-pig received "ten drops of the fluid, and not one of the animals contracted "tuberculosis"?—I am aware that that is put upon record.

1574. Have not these experiments actually occurred?—I believe so. I believe what he said was correct.

1575. A guinea-pig is much more susceptible to tuberculosis than a human being?—Probably, with the exception of the horse, it is the most susceptible.

1576. And the inoculation of it in the peritoneum is much more rapid than by ingestion?—Yes.

1577. Or by inhalation?—Yes, in all probability.

1578. And much more certain?—Yes, in all probability.

1579. And yet all these guinea-pigs escaped?—Yes; he has one positive, but all the negatives are in your favour.

1580. There is a reference to another experiment where ten cows were dealt with—"In a subsequent series he tested, in the "same way, the infectivity of the muscle juice in ten cows with "wide-spread tubercular lesions (lungs, pleura, peritoneum, "lymphatic glands, &c.), each guinea-pig receiving one cubic "centimetre of the juice. Out of the forty animals thus inoculated only one became tubercular." You know that this experiment occurred?—Yes.

1581. After that, will you venture to tell me that inhalation is not, in the language of the Commissioners, the commonest way by which the bacilli are introduced to the system?—I think not.

1582. These experiments do not affect you a bit?—No. (Refers to page 354 of the *Journal of Comparative Pathology and Therapeutics* for December, 1888.)

1583. If you get to the peritoneum, of course you are beyond the alimentary canal altogether?—Yes, you are outside of it.

1584. And I suppose there is no part of the body through which disease can be more readily communicated than through the peritoneum?—That is very likely.

1585. So that the gentleman who was experimenting selected the best part of the body for success?—Yes; but you would be surprised to find that the advanced lesions would be in the lungs even in that case, and certainly not by inhalation, because experiment shows that it is not by inhalation.

1586. And the experiment failed; the experiments having failed in this case as you agree, does that not lead you to agree with the Commissioners?—You cannot say that they failed if there was one success.

1587. You think that if he succeeded once, that means that man cannot eat this food?—I think that one success overthrows a great many negatives.

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- 1587-1. The death of one guinea pig from peritoneal inhalation makes you think that human beings who eat this food will die?—No; nobody would be living at all in that case.
1588. It leads you to think that this food ought to be condemned as unfit for the food of man?—Undoubtedly; that is my contention.
1589. Have you ever heard of any man taking his dinner by inhalation through the peritoneum?—No, but I have heard something very extraordinary; I have heard of a man being kept alive by milk for six weeks. That is by inhibition.
1590. These were made by inhalation?—I don't know; they were made by puncture.
1591. Is there any way by which this food can get to the peritoneum in ingestion?—Undoubtedly; by the lymphatics.
1592. You told me that you knew of no death by tuberculosis by the alimentary canal?—You cannot trace each death.
1593. The juice must go through the alimentary canal before it reaches the peritoneum?—Precisely.
1594. You spoke of Bang of Copenhagen; are you aware that he made experiments with the milk of cows suffering from generalised tuberculosis?—Yes.
1595. And that in twenty-one cases in which he experimented the milk was found virulent only twice—*Journal of Pathology*, September, 1888?—Yes; but these cattle were under experiment of a peculiar kind. He wanted to discover whether, in the absence of lesions in the mammae of the animal, tuberculosis could be conveyed by milk, and in these twenty-one cases, as I understand, there was an entire absence of lesion in any of the mammary glands, and Bang's contention was that even in the absence of lesion in the mammary glands you could have tuberculosis from the milk of a tubercular cow and which he proves by these cases.
1596. You mentioned Bang as an authority, and I found him out after great difficulty; he was present at that Congress?—Yes.
1597. Do you agree with him?—I have not had the opportunity.
1598. You heard his speech?—Yes.
1599. Did you agree with him?—If the man told the truth—I believe he had no other motive.
1600. He speaks of generalised tuberculosis?—That is tuberculosis in which the system generally is invaded.
1601. Is there tuberculosis in which the whole system is not affected?—That is a question of argument.
1602. You have no opinion upon that question?—Yes, I have an opinion.
1603. You have an opinion on most questions?—I would not be in favour of the total condemnation if it were not my impression that it is risky to eat any portion of an animal in which the bacillus is found.
1604. If it were established as a scientific fact that there was such a thing as local tuberculosis, and that an animal is affected only to a slight extent in the lungs, you would not be in favour of condemning that animal?—No, if it could be demonstrated, I

would not. I would not be in favour of any waste of the national supply. May 29,
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1605. Is the tubercle the cause of the bacillus, or the bacillus the cause of the tubercle?—The bacillus is the cause of the tubercle, undoubtedly. Archd.
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1606. You know that there has been recovery from tuberculosis in the human subject?—I am not aware of that fact.

1607. You don't attend upon man?—No; but I think it is very often the case that apparently a recovery takes place, and when some excitement or disturbance of the condition of the animal takes place, the disease breaks out afresh. I don't believe that a man who is suffering from general tuberculosis can recover.

1608. I agree with you, and I am glad to find that we can agree upon one point. Have you any doubt that animals, if we give them time, instead of killing them, would often recover from local tuberculosis?—I believe that by the excision of these scrofulous parts, such a result is obtained.

1609. When the bacillus enters the system, he must come from the open air in some way?—Not necessarily from the open air.

1610. From the air?—Yes, generally.

1611. And he gets into the system the best way he can?—Yes.

1612. Does he travel much about, or fasten upon a particular part?—It is carried either by the circulation in the lymphatic system or the blood.

1613. Until he finds a lodgment?—Yes. He is generally arrested somewhere about the lymphatic glands.

1614. He does not take a day to find a lodgment?—No.

1615. We were told yesterday that he goes careering about the system, but there is no truth in that?—Yes, I believe there is.

1616. That he goes careering about the system?—He will be taken by the lymph circulation wherever lymph is taken.

1617. Till he finds a favourite lodgment?—Yes, till he begins to propagate.

1618. Is it the case that these bacilli remain permanently in the place where they are first settled?—No, not necessarily.

1619. I suppose a bacillus may change his mind, but has not that occurred?—I don't know about the mental condition of a bacillus.

1619-1. Is the bacillus ever propagated through the blood circulation?—I believe that is quite the case, and I have found it to be the case that the bacillus in the breaking down of the tissue enters through the blood vessels, and is carried down the blood stream.

1620. Do you agree with Koch on page 192:—"If we note the "behaviour in the body of the tubercle-bacilli, which have "entered the lungs by inhalation, the skin through wounds, the "intestinal canal by being swallowed, we see that they often "remain for some time, perhaps permanently, in the place where "they first settled"?—No.

1621. Koch is wrong there again?—Yes. I believe that it is possible for a bacillus to be imprisoned. Nature does repair individuals by setting up a wall round an affected part, but

May 29, 1889. ultimately it usually breaks down: and I believe that it is possible for the bacillus to be located like that.

Archd. 1622. Do you know what the practice in Paris is as to con-
Robinson. demning animals which have suffered from tuberculosis?—At the time of the Congress, the rule was partial condemnation, which was admitted by the chief inspector of the Paris abattoir at the time, but the decree of the Government insisted on total condemnation of such animals, and I believe that compensation is being given, or about to be given, and I suspect now that they do give compensation.

1623. But when the disease was local, as they understood it, they passed the animal?—Yes, except the diseased parts.

Cross-examined by *Mr. Jameson*.

1624. About these particular animals, I shall ask a few questions—was the flesh in the sides of the animals, apart from the lungs and viscera, good?—Fairly good.

1625. In both animals?—Yes, in both animals. It was rather superior in the bullock.

1626. The cow was an older animal, and it was used as a milch cow?—Yes, it had that appearance.

1627. You are aware of the manner in which animals affected as these are have been treated hitherto in Glasgow?—Yes.

1628. The lungs and viscera and whole internal lining are taken out and nothing but the sides left?—Yes.

1629. Now, the parts of them that you examined, the internal portion of the diaphragm and the dorsal portion of the lung, and the mesenteric glands, would be all taken out under that system?—Yes.

1630. And what we are inquiring about now is whether the sides of the beef of the cow and bullock are or are not unfit for human food?—Yes, and in my opinion they are not fit for human food.

1631. In order to show whether they are or are not fit for human food, don't you think that you might have taken the flesh and examined it microscopically?—It might have been done.

1632. Why did you take the portions which would be thrown away in any case, instead of taking portions of the flesh, to examine them microscopically?—Simply because it would have taken a long time to get a proper examination of the lung itself, and I had to allow for the preparation of this case. The mere fact of the examination of that kind being communicative would not prove that the flesh was not injurious, because two carcasses present very often similar appearances affected with tuberculosis—one may give a positive result with the juice of the flesh, and the other communicative, and still the most favourable appearance may be that given by the carcase for the positive result. Such has been the result of Arloing's experiments, and the definite solution of the question is that in the aggregate 2·6 of the animals' carcasses which have tuberculosis are capable of giving infection to other animals.

1633. All that is very well, but you say here that the pieces

which you examined microscopically, which is the true way to find out whether there are bacilli present, were all parts that would be thrown away?—Yes.

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1634. And you have not examined any part of the flesh which alone the defendants here wish to use as human food?—That is quite true, but presumably——

1635. As far as your knowledge goes, there is not a single bacillus or a single spore of the bacillus in any of these sides of beef?—I am afraid there would be, but I don't know positively.

1636. Don't you think it would have been very much more to the purpose if you had taken some of the flesh or juice which is in dispute, and examined it microscopically? You could have done that just as well as taking the parts from the interior of the animal?—Yes, quite as well; all you would have to do would be to provide us with time and license.

1637. Not to examine it microscopically?—No, but I don't consider that in these circumstances that would be a sufficient test.

1638. If bacilli were present, you could discover their presence by microscopical investigation?—Yes, probably.

1639. And might you not have selected parts of the sides of the beef which were most likely to harbour bacilli and examine them?—It could have been done.

1640. And you did not do so?—No.

Re-examined by *Mr. Comrie Thomson*.

1641. What amount of flesh can be examined under the microscope at once?—A very small part.

1642. So that to have examined the carcase exhaustively would take a very long time?—Yes.

1643. It is practically impossible?—Yes, practically.

1644. And what you did was the only practically possible way?—Precisely.

1645. I forget whether you said, and my learned friends also, did you find bacilli in the glands in either of these animals?—Yes, in the lungs of the bullock.

1646. In the glands of the lungs of the bullock?—In the lungs themselves. We look upon the lungs as being glands.

1647. But you found them in the lungs themselves. Did you find any in the lymphatic glands?—No. I made an examination of some of the lymphatics from the mesentery, and I got evidence of the commencement of the disease in one of the glands of the mesentery, but I could not say that I saw the bacillus.

1648. But you saw signs of the commencement of the disease of tuberculosis?—Yes.

1649. In the glands of the mesentery?—In one of the glands of the mesentery.

1650. Does that show that there was great probability of the disease being communicated throughout all the vascular system?—Yes, I should say so.

1651. And having got evidence of the disease of tuberculosis, does that satisfy you that the bacilli are there or thereabouts?—

May 29, 1889. It does, but the presence of the bacillus is certainly the most important test.

Archd. 1652. No doubt, but assume that tuberculosis is produced by
Robinson. the bacillus, then if you have the commencement of the tuberculosis you must assume the existence of the bacillus?—Yes.

1653. He has been there before?—Yes.

1654. And if he has left, he has gone on another errand of mischief somewhere else?—In all probability.

1655. He has gone to another gland in another part of the body?—Yes.

1656. Is there not a famous experimentalist called Gerlach of Hanover?—Yes.

1657. He says this—I am reading from p. 113 of Fleming's book—"All these phenomena require for their completion, says "Gerlach, a somewhat long interval, so that the flesh of tuberculous animals is not noxious at the commencement of the disease. During this period of the affection the body of the diseased creature certainly contains the morbigenous virus of "tuberculosis." And then he goes on—"As a proof of this "propagation, he considers (1) the existence of tuberculous lesions "in the lymphatic glands in the vicinity of the organs which "are the seat of tubercular neoplasies, and which may, in such "cases, be looked upon as the point of origin or spread of the "morbid infection; (2) the presence of caseous centres, especially "in the lungs, these centres indicating that they are already "undergoing disintegration; the greater the number of these "centres, the greater is the infective power and noxiousness of "the flesh; (3) the secondary extension of the tubercles." Now, had both these animals certain of these symptoms?—In the cow we had all these symptoms.

1658. And in the bullock did you notice that there were certain caseous centres?—There were. They were not very good examples of caseation; at least, they were further advanced than that stage, they were disintegrating into calcareous particles.

1659. But these indicated to you that from a visible tuberculous centre there had already commenced a generalisation of tuberculosis throughout the system?—Most undoubtedly.

1660. *Sheriff Berry*.—I understand you to say that there were noxious symptoms in the bullock which indicated a generalisation of the tuberculosis throughout the system?—Yes.

1661. The cow had all the symptoms there mentioned, while the bullock had such symptoms as I have now stated?—Yes.

1662. *Mr. Comrie Thomson*.—In short, your theory is this, or rather not your theory, but your belief, that where you have the visible tuberculous centre there is every probability that the generalisation of the disease throughout the whole system of the animal has begun?—Yes.

1663. Now, with regard to experiments I wish also to refer you to a statement in this book of experiments, made by the same man, Gerlach. It is said at p. 81, "Of 46 different animals "submitted to experiment, and fed with uncooked tuberculous "substances, 35 were infected; of 35 animals fed with uncooked

“flesh from tuberculous cows, 8 contracted tuberculosis; and of May 29,
 “15 fed on cooked tuberculous matter, 10 became diseased.” 1889.
 Now, assuming that that is a true statement of the experiments Archd.
 —and we are on both sides taking the case on the footing that Robinson.
 the scientific men endeavour to do their best to tell the truth—
 that shows that the cooking, although it may diminish the risk,
 does not prevent it?—It does not destroy it.

1664. And the cooking would always be a question of degree?
 —Precisely.

1665. Did you notice in the reference that my learned friend
 made to the temperature that 107° was to be continued for
 several weeks before the bacillus would yield to it?—I take it to
 be like that.

1666. At a temperature of 107° ?—I think he said Fahrenheit
 —not centigrade.

1667. But 212° Fahrenheit is boiling point?—Precisely.

1668. And you say that you think boiling point would be
 necessary to destroy the bacillus?—I do.

1669. But that is not affected by the statement here that 107°
 continued for several weeks would destroy it?—No. Besides,
 as matter of fact, if you raise it to a definite temperature, and
 allow an interval to occur and do it again, it leads to a different
 result.

1670. You stated that you did not find evidence to justify the
 conclusion in sentence 45 of the Privy Council report:—“Evidence
 “also has been laid before us to show that, although rarely, the
 “disease may affect the flesh, and that the ordinary methods of
 “cooking are often insufficient to destroy the bacilli buried in
 “the interior of the limbs.” Did you notice the evidence of
 Sir Charles Cameron?—I should like to make a correction there,
 not precisely a correction, perhaps, but I did not mean to say
 that I did not think there was no evidence; but I mean that in
 that book there has been no evidence adduced sufficient to make
 the statement so strong.

1671. I quite understand you to say that, and therefore I just
 wish to point out what possibly you may have overlooked, what
 I am now going to refer you to. Look, at page 253 of the
 minutes of evidence, in the evidence of Sir Charles Cameron, he
 says:—

“7967. Then, as to your objection to eat the meat of an animal
 “suffering from tuberculosis, have you any reason to think that
 “the microbes could not be destroyed by cooking?—No doubt, if
 “every precaution were taken. If you know what you are going
 “to do, and every precaution has been taken, a sufficiently pro-
 “longed exposure to a high temperature would destroy the
 “bacillus, but we know that most people would not do so, and
 “we know that there is such a thing as eating meat very under-
 “done. It is sometimes quite red. I have seen it violet. We
 “know that when meat is violet in colour no microbes present
 “are destroyed. I have myself seen the meat purple and violet
 “in colour.

“7968. Then as to the milk, I think you said it is transmitted,

May 29, 1889. Archd. Robinson. "and you believed that it could be transmitted by the milk?—I believe from what I have read of the experiments and the pretty extensive literature on that subject, and from my general knowledge of those matters, that milk is a vehicle transmitting tuberculosis.

"7969. Would boiling destroy the microbes there?—I think it might if the boiling was prolonged; but when it is merely raised to a boiling temperature, to an exposure to a temperature of 212 degrees, although the microbes may be destroyed, the ova, if I may use the term, may withstand a higher temperature than the microbes themselves. Professor Horsley knows that there are numerous experiments which show that prolonged exposure will not kill the germs of the microbes themselves." I also read from the evidence of Mr. Lingard, at page 257:—

"8065. What temperature kills bacilli?—One to two minutes' exposure to a temperature of 212 degrees Fahrenheit, but in the case of boiling a piece of meat of course the inside of the meat would never reach that temperature.

"8066. Then in roast beef it would be less likely to be destroyed?—Less likely, especially in the interior—in the middle of the joint."

You see that these two distinguished men had their attention drawn to that; the matter had not been overlooked, and I take it that you do not dispute the statements that these two gentlemen make?—Certainly not.

1672. These two gentlemen, Sir Charles Cameron and Mr. Lingard, are very eminent authorities, are they not?—Very eminent.

1673. And therefore there was evidence before the Committee upon which they could form an opinion as to the effect of exposure to high temperature, because these two gentlemen had given their evidence upon that?—There is no doubt in my own mind about it, but it is a pure matter of contention.

1674. And the Committee arrived at that conclusion upon certain evidence, because I have pointed it out to you?—Yes.

1675. Now, these microbes that are peculiar to infectious diseases produce poisonous substances—what I suppose you would call toxics, a sort of alkaloid which has been called ptomaines?—Yes.

1676. Is that a physiological alkaloid?—It is.

1677. Is it poisonous?—Yes.

1678. If the microbe of tuberculosis gets into the system, does it not immediately set to work producing alkaloids?—I believe so.

1679. And the longer he works, the more is he introducing poison into the whole system?—That is so.

1680. Which is being from moment to moment——

1681. *Mr. M'Kechie*.—This is new matter, and my learned friend is leading as hard as he can.

1682. *Mr. Comrie Thomson*.—I admit the leading, but I do not think that it will do much harm. (To witness) Do you think that it is safe for the public to say that when you had

these poisonous substances present in the tissues of an animal which is admittedly suffering from a disease——

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1683. *Mr. M'Kechnie* again objected that the question was proceeding on an assumption which had not been established in point of fact. Archd. Robinson.

1684. *Mr. Comrie Thomson*.—On the assumption which my friend, in cross-examination, undertook to put to you, that this disease has not been proved to become communicable as such to a human being——

1685. *Mr. M'Kechnie*.—I put no such assumption.

1686. *Mr. Comrie Thomson*.—On the assumption that it has not been proved that the disease is communicable as such to a human being, would you consider it safe to allow the flesh of an animal to be partaken of by human beings in which these toxic substances were being set up in the tissues?—No.

1687. Is it your opinion that the proof that this disease of tuberculosis is a disease communicable by ingestion is absolute? —That is my opinion.

1688. Do you know of a Professor Klein in London?—Yes.

1689. He occupies a position in connection with the College of State Medicine?—I understand he does.

1690. He has recently made a communication to the *Glasgow Herald*, and I wish to ask you to say whether you agree with him:—"In the first place, there is the experimental fact that "animals susceptible to tuberculosis contract the disease when "the tubercle bacilli, in whatever form or from whatever source, "are introduced into their digestive tract; in the second place, "there are the numerous cases of acute miliary tuberculosis in "children not derived from tubercular parents and not possessed "of any hereditary taint." Do you agree with that?—I do.

1691. Then he says——

1692. *Mr. Jameson*.—This is all new. My learned friend has evidently got a new document to examine from.

1693. *Mr. Comrie Thomson*.—I quite admit that, except as a matter of convenience. I could easily put this to other witnesses, but I thought it might be more convenient to open upon these points with this witness in the box. If, however, my friends object to this new matter, and if your Lordship thinks it is new matter for re-examination, I will at once desist.

1694. *Sheriff Berry*.—I think they would be entitled to cross-examine upon it, because all this seems to me to be new.

1695. *Mr. Comrie Thomson*.—If that be your Lordship's view I most willingly bow to it, because it won't prejudice my case. It was merely as a matter of convenience that I was introducing it here.

1696. *Mr. Jameson*.—If you are to take it out of this witness and not out of others, I will withdraw my objection.

1697. *Mr. M'Kechnie*.—Then, is this witness the only one to speak to it?

1698. *Mr. Comrie Thomson*.—Oh, no.

1699. *Mr. M'Kechnie*.—Is Klein coming himself?

1700. *Mr. Comrie Thomson*.—I decline to tell you. (To witness)

May 29, 1889. — Archd. Robinson. The learned author further goes on to say:—"In many cases of tuberculosis of cattle, not only the lungs, the diaphragm, the lymph-glands, the spleen, and the liver are found to contain the tubercular deposits, and of course also the tubercle bacilli, but, as Professor M'Call has shown, the marrow of bones is also involved by the disease. Dr. Lingard and myself have found that in tuberculosis artificially produced by subcutaneous inoculation in guinea-pigs, one of the earliest tissues containing tubercles and the tubercle bacilli is the marrow of bones. Do not all these facts conclusively prove that the tubercular virus becomes distributed through the body by the vascular system?" How would you answer that question of the learned writer—that it does?—That it does.

1701-2. *Sheriff Berry*.—You are quoting apparently from the *Glasgow Herald*?

1703. *Mr. Comrie Thomson*.—I am quoting from a letter or statement communicated by Professor Klein to the *Glasgow Herald* of Monday.

1704. *Sheriff Berry*.—Well, that is a document that I carefully avoided reading when I saw it in the paper.

1705. *Mr. M'Kechnie*.—And it is a communication that, if I had a jury here, I would have asked your Lordship to call the *Herald* to the bar for publishing on the eve of such an important trial as this.

1706. *Sheriff Berry*.—It does not matter with me; I have avoided reading about the literature on the subject.

1707. *Mr. M'Kechnie*.—We were sure your Lordship would not give any effect to it.

1708. *Sheriff Berry*.—Well, if this matter is to be introduced, we had better have a copy of the *Herald* put in, because I have not read it.

1709. *Mr. Comrie Thomson*.—Certainly, that will be done. I can only use this statement of Professor Klein in the way I am doing now, unless I put him in the box himself. I cannot ask your Lordship to hold that all this is proved, but it is a very convenient and a very common way too of obtaining the opinion of a witness who is familiar with the subject, to ask him if he agrees with certain things that have been written about it. Then he says—"Though we may not by naked-eye inspection or even by microscopic examination be able to detect the tubercle bacilli in the muscles or connective tissues, how can we be justified in excluding their presence from the circulating blood, including the blood in the vessels of the muscles and connective tissues? What would be our reasons for saying that at the time of killing the animal the tubercular virus is not circulating in the blood, is not in transit to distant localities, say to the marrow of the bones or other tissues, destined, in the natural course of things, to become the seat of tubercular deposit? It must be clear from these considerations——"

1710. *Mr. M'Kechnie*.—Really I must stop this. The *Glasgow Herald* has been counsel for the prosecution for weeks, containing article after article. The *Herald* has been full of all this,

and now is your Lordship to be treated to articles read to you which you declined to read before this trial came on ?

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1711. *Sheriff Berry*.—The only point is whether Mr. Thomson may not make these quotations of certain passages, and follow them up by a question to the witness whether he agrees with them.

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1712. *Mr. Comrie Thomson*.—Just the same as my learned friend has been doing from his books. He has had Koch all the morning, and this is just the same as the book.

1713. *Sheriff Berry*.—Of course, it is not desirable to lengthen this inquiry, and perhaps Mr. Thomson will not prolong it.

1714. *Mr. Comrie Thomson*.—I have just two sentences to read. Of course, your Lordship notices that this is not an article in the newspaper. (To witness) After this, will you just tell me whether you agree with the statement of opinion I have just read to you ?

1715-6. *Mr. Jameson*.—I object to that question.

1717. *Sheriff Berry*.—I think that is rather objectionable.

1718. *Mr. Comrie Thomson*.—In so far as what I have read contains statement of opinion, do you agree with it?—I do.

1719. Now, my learned friend spoke of the guinea pig as being an exceedingly susceptible animal. I find in the report of the Privy Council Committee, p. 20, article 12, the following statement—"The tubercle bacillus does not attack all domesticated animals equally. Arranging them in order of respective liability to the disease, they are as follows:—Man, milch cows, fowls, "rodents, pigs." I presume a guinea pig comes under rodent?—Yes.

1720. Do you agree with that order of susceptibility?—No.

1721. You think the guinea pig is higher?—Yes, and I think there is another animal there that gets precedence, the goat. The goat, according to Nocard's experiments, is exceedingly unsusceptible.

1722. They put the goat after the pig here?—Yes. I question if the horse is not, from the point of rapidity with which death is produced, more susceptible than either man or the guinea pig.

1723. But this is from the point of view of liability to take the disease only, not the virulence of it; that is where, I think, probably we were at cross purposes?—Then the goat is the only animal I would exclude from that category as being particularly susceptible.

1724. Then, in this view of liability to take the disease, you would put man and then milch cows and then fowls, and you would put the goat in there?—Yes.

1725. And then rodents, and that includes the guinea pig?—Yes. I think otherwise it is correct.

1726. The guinea pig would come third or fourth after man in liability to attack?—Yes.

1727. Of course, I may take it that tuberculosis in the adult man or woman generally attacks the lungs in the form of phthisis?—Very often.

1728. And is very commonly fatal?—Very commonly.

May 29, 1889. 1729. So that in man it is more serious perhaps than in the case of the lower animals?—Yes.

Archd. 1730. Then there are one or two little points I wish to clear up. You said, and my learned friend made merry over it, that when you were only 20 years of age you suspected the existence of microbes in many specific diseases; that was a suspicion entertained by men very much your seniors at the time?—It was precisely the contention of the Lyons Veterinary College. It had been a contention for many years of Chauveau that it was a disease that was communicable, while the other colleges took the other side, and held there was no communicability in it, but that special influences and surroundings had the same effect.

1731. The matter had been stirred at that time, and had been stirred in the scientific world for years before?—Yes, and Saint Cyr had gone a long way to establish it by his experiments on glanders shortly before that time, some of which, the later ones, I saw also.

1732. The word “microbe” was used for many years, I think, before the word “bacillus” was introduced?—Yes, in 1878 it was introduced by Dr. Sedilot.

1733. But it was used to cover ignorance more than for anything else, because it means a little being?—It was an escape from a difficulty. There were so many discussions as to whether it was vegetable or animal or intermediate that they hit upon the word as being a very suitable one, describing simply a little being.

1734. Then, the fact that these diseases were produced by, and were communicable through, a minute organism was a doctrine well known in the scientific world long before Koch’s discovery in 1881?—Well suspected.

1735. The discovery of Koch consisted in finding out a minute organism in the shape of a rod, which was the specific organism in tuberculosis?—Yes; it had been anticipated previous to that time.

1736. Then my friend thought he had convicted you of once making a mistake; I suppose most of us have made mistakes, but this special mistake that he speaks to——?—Was not a practical mistake.

1737. That is the very thing I was to ask. Your instructions were to examine this herd, and if you saw anything suspicious in the direction of pleuro-pneumonia, I presume you were, under the Contagious Diseases (Animals) Act, to seize and slaughter?—Or quarantine.

1738. You were to deal with it?—Certainly.

1739. The animal you considered unsound, among other symptoms, had latent pleuro-pneumonia?—Yes.

1740. High temperature?—Yes.

1741. What else?—Grunt, difficulty in breathing, and crepitation upon auscultation. Altogether it was a very suspicious case, and not only that, but there were four or five animals in the same lot that were similarly affected. Had it been one animal, I question if I would have taken upon me to advise the

killing of it, but seeing that there were four or five animals exhibiting precisely the same indications, I thought I would not be justified in allowing the cattle to proceed.

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1742. Do you not think you would do the same thing to-day in similar circumstances?—I do; I would re-commit the mistake.

1743. It was not a practical mistake?—I think not.

1744. As a matter of fact, it is almost impossible for a man at an examination to discriminate between pleuro-pneumonia contagio and pleuro-pneumonia?—Yes, sthemic.

1745. Did you either in the bullock or the cow see anything to connect the symptoms about the lungs, the morbid symptoms, with overdriving?—No.

1746. In either animal you saw no signs of overdriving?—No.

1747. Overdriving would not account for any of the morbid appearances which you saw?—No.

1748. You stated that you were associated in some way in your microscopical examinations with Dr. Lawrie; who is Dr. Lawrie?—He is a medical practitioner in Greenock.

1749. In what sense did he assist you?—He assisted me to mount slides and stain specimens and examine the tissue generally.

1750. But is he a microscopist, or did he just assist you in your own examinations?—He has some pretensions to be a microscopist.

1751. But would you call it a joint investigation which you made, or was the investigation made by you with his assistance?—I think the latter would be the more correct way of putting it.

1752. *Mr. Comrie Thomson* remarked that he would call Dr. Lawrie if necessary, but if counsel on the other side made no remark on his absence he would not do so.

1753. *Mr. M'Kechnie* said he did not think it likely they would make any remark on the fact of Dr. Lawrie not being called.

1754. *Mr. Comrie Thomson*.—About the sputum of animals, how is the word sputum generally used by medical men?—As applying to the expectoration generally.

1755. Of human beings?—Yes.

1756. But there is saliva and moisture produced in the mouths of the lower animals?—Yes, the thing is tantamount the one to the other.

1757. The foam of a horse is very much that?—Yes, saliva mixed with air.

1758. And what you see falling sometimes from the nostrils and mouths of cattle may be called sputa, although it never is spat?—That is so.

1759. It is not ejected forcibly, but it overflows—that is the difference?—That is so.

1760. Then, *M. Nocard*, to whom you were referred, was he one of the minority of three at the Paris congress?—He was. He is the director of the Alfort Veterinary School, and as such he is unquestionably under the thumb of the Minister of Agriculture, and, of course, after the decree of the Government *Nocard* is quite of our opinion.

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1761. He was one of the three in the minority at the Congress, and he was at the time an official in the department of agriculture, but now that the decree of the Government has been passed you think his practice would be different, and that he will be of your opinion?—Yes.

1762. *Sheriff Berry*.—That is only an inference?—It is only an inference, but it is an inference upon a fact.

1763. But you don't exactly know what his opinion is?—He gave us a very favourable impression of it afterwards. He said he was quite satisfied that there should be a total seizure.

1764. *Mr. M'Kechnie*.—Allow me to ask one question with reference to Fleming's book; in the passage referring to the experiments which were made, the expression used is "uncooked flesh" as against cooked tuberculous matter. What do you understand the author to mean there by cooked tuberculous matter?—I should say it is presumably some of the glands that are undergoing caseation.

1765. Becoming cheesy?—Breaking down.

1766. That is to say, they cooked the tubercle itself and experimented with that?—Yes. Of course, I must explain that nearly all Fleming's works are simply translations, and some of the translations are not properly accurate.

1767. But that is what you infer?—Yes.

1768. That is a totally different thing from experimenting with the cooked flesh itself?—Yes, which was done by Toussaint.

1769. Now, just one other question—you took away one of the glands of this bullock; you found no bacilli in the mesenteric gland?—No.

1770. What was the other gland you took away?—A portion of the lungs.

1771. The lungs is a big gland; but did you not take away any of the lymphatic glands?—No, I did not, except those lymphatics which you have spoken to now—the mesenteric gland.

1772. But you did not take away any of the others?—No; I took a portion of the pleura, but there was no lymphatic gland attached to it.

1773. Do you keep a microscope for these experiments?—I do.

1774. What is the power of it?—It is a Ross, with a 12 inch; that is the highest power I have.

1775. What is the magnifying power?—With the glass I have it is 1750 diameters.

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Mr. ANDREW M'GEOCH, *sworn*, examined by *Mr. Comrie Thomson*.

1776. You are a member of the Royal College of Veterinary Surgeons, Glasgow?—Yes.

1777. And you are inspector for the Local Authority of the Burgh of Paisley under the Contagious Diseases (Animals) Act?—Yes.

1778. You are also, I believe, inspector of slaughter-houses under the Police Commissioners of Paisley?—Yes.

1779. And you have a very considerable general practice?—I have.

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1780. How old are you?—41 years of age.

1781. Did you, about ten years ago, conduct a series of experiments on rabbits?—I did.

1782. What was the object of these experiments?—My object was to see if tuberculosis was transmissible from the cow to the rabbit.

1783. Did you feed the rabbit with the milk of a tuberculous cow?—I did.

1784. Were the rabbits so treated kept along with other rabbits and treated alike, except that the two experimented on got the milk from this tuberculous cow in addition to other feeding?—They were all together.

1785. All treated alike, with that exception in the case of two?—Yes.

1786. What was the result of the experiment?—The result was that the one rabbit died in three months, and the other died in three months and a fortnight, of general tuberculosis.

1787. Now, on the 16th of this month, did you go to the York-hill Wharf refrigerating chamber, and see the two carcasses that are now in question?—I did.

1788. Did you examine the lungs and lymphatic glands of the cow?—I did.

1789. And what did they exhibit?—Tubercular deposit.

1790. Did you also examine the bullock in the walls of the chest and part of the diaphragm?—I did.

1791. And what did that examination exhibit?—Tubercular pleurisy.

1792. A part of the diaphragm had already been removed?—It had.

1793. Did you find tubercular nodules in the walls of the chest of the bullock?—I did.

1794. And also in the part of the diaphragm?—Yes.

1795. Was there any doubt left in your mind that they were tubercular?—No doubt.

1796. You cut, I believe, into the fat between the first and second ribs just above the front of the sternum?—Yes.

1797. What is the name of the gland that is situated there?—The prepectoral gland.

1798. You got the prepectoral gland there?—I did.

1799. Would you kindly point upon your own body to the sort of situation of the prepectoral gland?—(The witness did so.)

1800. It is on the right hand upper part of the lung?—Yes.

1801. *Sheriff Berry*.—On the right side?—It is on both sides.

1802. But what you took was on the right side?—In the centre.

1803. *Mr. Comrie Thomson*.—How is that gland situated with reference to the apex of each lung?—It is at the bottom of the lung.

1804. Any way, it is in the front of the chest?—Yes.

1805. Did you remove that prepectoral gland and part of the diaphragm for microscopical examination?—I did.

1806. Was that gland embedded in fat?—It was.

1807. And how far was it from the part of the chest which manifested tuberculous lesions?—It would be about 18 inches.

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1808. Was there another prepectoral gland looked at by you a little further on in the chain of glands?—I looked at the prescapular gland. It was taken out to me by a gentleman who was present.

1809. What was his name?—I don't know the gentleman's name.

1810. Was he one of the officials?—No; I think he was a butcher.

1811. What was the condition of that second gland?—It was inflamed—congested.

1812. With regard to this second gland I used the expression that it was further on in the chain of lymphatic glands, perhaps that expression was not quite a correct one; how was it situated with regard to the first gland?—The first gland was further in to the thorax; in fact, the prescapular gland is not in the thorax, it is in the front of the shoulder.

1813. Then, it is further into the system—into the structure of the body of the animal?—It is further into the structure of the body.

1814. Before we come to the microscopical examination, did you notice anything in the external condition of the first gland?—I saw tubercular deposits in the prepectoral gland.

1815. And the second one was congested?—Yes.

1816. Did you form any idea as to what caused the congestion?—I did.

1817. What was it?—I was of opinion that the animal was suffering from tuberculosis.

1818. Then, leaving the freezing-house, you proceeded to the Glasgow Veterinary College, taking the gland and part of the diaphragm with you?—I did.

1819. Which gland did you take?—The prepectoral.

1820. Did you prepare specimens for microscopical examination?—Professor Limont did so. I assisted him.

1821. Was it from the diaphragm or from the gland that you prepared the specimens?—From the gland.

1822. And were these preparations made in the usual and approved fashion?—Yes.

1823. When the preparations were complete, did you place them under a microscope of strong power?—Yes.

1824. How many diameters does it magnify?—I could not say; I did not ask him.

1825. But it is a strong instrument?—Very strong.

1826. What did you see through the microscope in the preparation you had made from the glands?—I saw the bacilli stained red.

1827. You knew the appearance of the tubercular bacillus?—It was the same as I had been shown before by Professor Williams in Edinburgh.

1828. What opinion did you form as to the condition of the carcase of that animal from the fact that you found bacilli in one of the prepectoral glands?—I formed the opinion that the carcase was unfit for human food.

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1829. The whole of it?—The whole of it.

1830. Were you of opinion that generalisation of tuberculosis had begun?—Yes.

1831. Are you of opinion that it is impossible to say with certainty to what extent that tuberculosis may have gone?—Yes.

1832. Now, in Paisley, what is your custom with tuberculous animals?—I condemn them.

1833. Do you condemn the whole animal although only apparently affected locally?—Yes.

1834. Did you, on the day that you were precognosced for this case, have a carcase of a cow brought under your notice?—Yes.

1835. Was it apparently locally affected with tuberculosis?—Yes.

1836. And how did you treat it?—I had it condemned.

1837. In Paisley?—Yes.

1838. That would be a few days ago?—Last Friday.

1839. Was it your opinion that the flesh of both the cow and the bullock in question was unfit for human food?—Yes.

1840. Did you prepare a report at the time, embodying your opinion, dated 16th May?—I did.

1841. Is that it (showing report)?—Yes.

1842. Is it true and correct?—It is.

Cross-examined by *Mr. Jameson*.

1843. You are aware of the distinction between local and miliary tuberculosis?—Miliary may be situated locally.

1844. But are you not aware of the difference between tuberculosis which is merely local in the animal, and tuberculosis which has become general?—Yes, it is called general tuberculosis, and you may have tuberculosis affecting only one single organ.

1845. I see that in some evidence you gave in a case in the Paisley Sheriff Court you say this: you were asked the question—"Is it dangerous for dairy purposes? that is, is the milk from "a cow suffering from tuberculosis fit for human consumption," and to that you answer—"That depends upon the extent of the "tuberculosis. If the tubercles have not begun to break up, the "milk is quite good and the flesh fit for human food, but if they "have begun to break up neither is the flesh nor the milk fit for "human consumption"; is that true, or is it not?—It was at one time, but I have changed my opinion now.

1846. *Mr. Comrie Thomson*.—What is the date of that?

1847. *Mr. Jameson*.—2nd June, 1886.—There was some mistake with regard to the flesh there.

1848-9. You say you believed that to be true at that time, but you have changed your opinion?—There is some mistake with regard to that case. I have condemned carcasses long before 1886.

1850. You will see what is said there if you wish to satisfy yourself of it?—I have seen it before. I say it is a mistake in the writing of it down, and I have said so before.

1851. You mean to say the shorthand writer has made a mistake?—I mean to say so.

May 29, 1889. 1852. Then, what do you say it ought to have been; these notes were all dictated by the Sheriff himself in your hearing, were they not?—No.

Andrew M'Geoch. 1853. Is not that the practice in Paisley?—It was not done before me.

1854. Then, how should this have read, if you wish to make it correct?—It was a case with regard to the selling of the milk.

1855. We all know that; read your answer as it ought to have been reported?—That the milk of a tuberculous cow, when the tubercles in the gland were beginning to break up, should not be given as human food; that was what was given by me in evidence, and nothing with regard to the flesh at all.

1856. Do you mean to say that you said nothing with regard to the flesh of a tuberculous animal?—I said nothing with regard to the flesh of a tuberculous animal. We were not dealing with a case of the flesh.

1857. Did you not give that opinion of yours with regard to the flesh of a tuberculous animal by way of illustrating the case you were then dealing with about the milk?—No.

1858. Then, how do you account for it being reported there?—They have made a mistake.

1859. It is reported there that the flesh of a tuberculous animal is quite good until the tubercles begin to break up?—That is the milk.

1860. But you say that about the flesh?—I see it here, but I say it is a mistake.

1861. How do you account for the reference to the flesh of a tuberculous animal being down there in the notes of the Sheriff Court unless you said something about it?—I said nothing about it; I cannot account for it at all. Mistakes will happen.

1862. But it is very unlikely that a mistake will happen to this extent, that there is a sentence devoted to the flesh of a tuberculous animal without you having said a word on the subject; do you think it is likely to happen?—Quite likely.

1863. Now, in 1886 did you think that about the flesh?—I was of opinion long before 1886 that the flesh of a tuberculous animal was unfit for human food.

1864. Even although it was only local tuberculosis?—Even although it was only local.

1865. Then, you did not even think what is written down here in 1886?—No.

1866. But you thought in 1886 that the milk of tuberculous animals was quite good?—Yes, only if the mammary gland was not affected.

1867. Your reason for that, I presume, was that unless the mammary gland was affected, you thought it did not matter although the animal had tuberculosis in its lungs, and other parts?—That was my reason. There was not much danger.

1868. And you thought the milk of a tuberclosed cow was perfectly fit for human consumption?—Yes, if the mammary gland was not affected.

1869. Of course, if the cow was generally affected with tuber-

culosis, the milk would be unfit for human consumption, I suppose you will admit that?—Yes. May 29,
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1870. The milk is just a secretion from the blood, is it not?—Yes. —
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1871. If there is a danger of bacilli in the blood and in the flesh, there is also danger of it in the milk, is there not?—Yes.

1872. The milk is much more dangerous to take into the human body than flesh, inasmuch as people do not boil milk before using it, whereas they boil flesh, is not that so?—Yes.

1873. And therefore milk is a much more dangerous mode of infection than flesh?—Yes.

1874. That being so, does it not follow that if an animal has only local tuberculosis in the lungs and viscera, the flesh may be used with perfect safety, just as the milk may be used with perfect safety unless the mammary gland is affected?—I say there is not the same danger, and I would still hold to that.

1875. If there is not the same danger with regard to milk, there is still less danger, is there not, with regard to flesh which has to be cooked and digested?—There is just the same risk.

1876. Do you think cooking affords no security against the transmission of this bacillus?—No, because the cooking may not be very well done.

1877. But it generally is pretty well done, is it not, especially in boiling beef?—No; I have often seen that when having food outside of my own house, in restaurants and such like, not very well done.

1878. In boiled beef?—In boiled beef, but more in roast beef.

1879. I was thinking you were referring to roast beef, but I was talking about boiled beef. I suppose any person who eats red roast beef runs a good many risks besides tuberculosis, does he not?—Possibly he may.

1880. There are a great many parasitic worms, the germs of which may be in the flesh if it is not properly cooked, and many find their way into the human intestines, is that not so?—It may set up indigestion.

1881. And may not they fasten themselves on the human intestines and breed there?—I don't profess to be a bacteriologist.

1882. Why not? You have come before us here talking of microscopical investigations?—No, all I talked to you about was looking on and assisting.

1883. Then, you are only here as an assistant in the matter of microscopical investigation of the bacilli in this case?—Yes.

1884. By whom was the investigation made?—By Professor Limont.

1885. But you do admit, do you not, that where beef is cooked that tends to diminish the larger number of bacilli?—Yes.

1886. And if the beef was all properly cooked so as to coagulate the albumen, that is to say, if the beef all changed colour from red to brown, that would be almost absolute immunity against the spores of bacilli and against living bacilli, would it not?—It would, if it was properly cooked.

1887. Therefore, to return to the question we started with,

May 29, 1889. milk is likely to be a much more dangerous source of disease of this description than flesh?—Yes.

Andrew M'Geoch. 1888. You saw the flesh of the animals in question here?—I did.

1889. Was it good enough?—It was dark in the colour, especially the cow.

1890. Was it abnormally dark, or was it just as dark as a good many animals you pass?—It was abnormally dark.

1891. How long had it been killed when you saw it?—It was on 16th May when I saw it; I don't know when it was killed.

1892. That was eight days after it was killed; that would account for the darkness in colour to some extent, would it not?—To some extent it would.

1893. But apart from that darkness, which may be accounted for by the delay in inspecting it after killing, there was nothing unhealthy about the appearance of the sides of meat?—It was dark-looking.

1894. I have said apart from that; we have done with the darkness. Apart from the darkness, which you have said might be accounted for by the time it had been kept, was the meat of the cow and the bullock quite healthy to all appearance?—It was not healthy.

1895. Was it to appearance healthy?—No, it was not to appearance healthy.

1896. What was wrong with it?—There were tubercular deposits.

1897. Where?—In the prepectoral gland of the bullock; and tubercular pleurisy.

1898. I am talking of the sides of the meat, apart from these internal portions?—That was on the side of the meat.

1899. It was not on what you would call the sides of an ox or of a cow, dressed, with the inside taken out; you know perfectly well what I mean. Was the meat, putting aside the internal part, quite healthy to all appearance, and firm?—It was firm, because it was frozen.

1900. And quite healthy to all appearance?—The fat looked quite healthy-like.

1901. And the lean too?—No.

1902. What was wrong with the lean?—It was very dark in the colour.

1903. But apart from the darkness?—Well, no flesh that is very dark in the colour is healthy.

1904. That is your opinion?—Yes.

1905. Even although it has been kept for a month in a refrigerator?—Even if it is.

1906. For some time in Paisley did you not pass carcasses of animals which had symptoms of tuberculosis in their lungs and viscera?—I did not.

1907. You have never done that?—No, not for the last fifteen years.

1908. You have condemned them if there was the least sign of tuberculosis?—Yes, that was when they were laid before me,

1909. By the inspector?—By the superintendent.

1910. But do you know if the superintendent passed them generally?—He did.

1911. When did you begin this more rigid rule in Paisley?—About two years ago.

1912. In consequence of what?—In consequence of the trade that was being carried on from the market of Paisley.

1913. What trade was that?—In tuberculosed animals.

1914. Was Paisley specially favoured in the way of tuberculosed animals?—Along with Glasgow it was.

1915. Were these animals for the most part suffering from general tuberculosis or local tuberculosis?—They were mostly suffering from general tuberculosis—a good many of them,—others were local.

1916. And now you kill both sets of animals, whether suffering from local or general tuberculosis?—We have no power to kill tuberculosed animals.

1917. You seize the meat of them after they are killed?—The superintendent of the slaughter-house detains them.

1918. Who is the inspector in Paisley—do you know Mr. Mackay?—Mr. Mackay is the sanitary inspector.

1919. It was he who drew your attention to this matter of local tuberculosis?—No, it was I who drew his attention to it.

1920. Who was it that drew your attention to it first?—There was no person required to draw my attention to it. I am inspector of markets there.

1921. Who drew your attention first to this subject in such a way as to make you compel the superintendent to change the practice that had hitherto obtained in Paisley?—The members of the Local Authority.

1922. It was they who put you on that, was it?—Yes.

1923. And you obeyed their orders?—I always obey orders from the Authority.

1924. And their orders were that all partially-infected animals were to be seized?—I did not require orders with regard to my inspection of animals to be given to me by the Local Authority. I act upon my own experience for that.

1925. Then, what orders did you get?—My orders were to carefully examine the cattle in the market, and report to the sanitary inspector all cases that I saw in the market of tuberculosis.

1926. Whether local or general?—Living animals.

1927. And with regard to dead animals, had you any instructions about them?—No instructions whatever. The same system is being carried on just now as was carried on for years back.

1928. Was the flesh which was afterwards seized and detained the flesh of animals which you had diagnosed to be tuberculosed when they were alive?—A number of them.

1929. And in these cases I assume the tuberculosis had got to a very advanced stage?—In some of them.

1930. But it must have got to the stage when either by emaciation or otherwise it was apparent to a person examining

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May 29, 1889. the living animal that the animal was diseased?—Not in them all—in some of them I say. There are cases every week nearly where an animal to all appearance is in good condition and examined by me, and certificates granted whether affected by tuberculosis or not.

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1931. And what happens with those?—Sometimes there are law suits over them.

1932. And sometimes are they discovered to be affected with tuberculosis when they come to be killed?—I have never yet made one single mistake in my opinion with regard to tuberculosis.

1933. Have you never passed one living animal which, when killed, was found to be locally affected with tuberculosis?—Never; because I have no right to interfere with tuberculosis when alive.

1934. But I thought you said you judged of them while alive?—I do so for other clients in the market.

1935. I am not talking of that; I am talking entirely of your official duties. You told us your orders were to examine and report whenever you saw animals affected by tuberculosis. Now, I am speaking of your official duties; you will understand that. Have you reported animals as free from tuberculosis which, when killed, were found to be affected with it locally?—I am not aware of any.

1936. Then, with regard to the animals which you have examined when alive for tuberculosis, how did you discover that they were so affected by tuberculosis?—By auscultation and percussion, and the other methods that a practical veterinary surgeon would apply.

1937. All that auscultation and percussion are to test the lungs?—Yes.

1938. Did that tell you whether the disturbance to the lungs which you perceived by auscultation and percussion was due to tuberculosis or was due to pleuro-pneumonia or some other disease, or possibly to some temporary affection?—There is a great difference between the symptoms of pleuro-pneumonia and tuberculosis.

1939. I am aware of that; but so far as auscultation and percussion are concerned, is there much difference?—Yes.

1940. Is there a difference between the symptoms discerned by auscultation and percussioin in all other forms of chest disease and that caused by tuberculosis in the lungs?—No. You may have consolidation of the lungs due to pneumonia that may have the same sounds on auscultation and percussion.

1941. So that would not tell you with certainty that it was due to tuberculosis, although you might think it was?—Not certainly; there is another symptom as well.

1942. Would not that auscultation and percussion only inform you of the existence of tuberculosis which had taken up its position in the lungs?—Yes.

1943. It would not tell you of the existence of tuberculosis in the alimentary canal or in the system generally?—No.

1944. Would the prepectoral gland form part of the inside of the animal that would be taken out if you were going to clean it and expose it for sale in a butcher's shop?—No. May 29,
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1945. Where would it be—in the shoulder?—In the foot.

1946. Under the shoulder?—Not under the shoulder—in front of the first rib.

1947. Did you examine any part of the cow that was taken?—Yes.

1948. Which parts?—The lungs.

1949. Microscopically?—No.

1950. You examined no part of it microscopically?—No.

Re-examined by *Mr. Comrie Thomson*.

1951. Has this subject of the effect of tuberculosis upon the whole carcase been gradually maturing of recent years?—It has.

1952. With the result that the view taken in Greenock and in Paisley and Edinburgh has been given effect to in these places?—It has.

1953. My friend has been distinguishing to you between local and general tuberculosis; is it your opinion, and do you act upon it, that although the visible signs of tuberculosis may be local, the disease itself may have permeated the whole frame?—In my opinion, it has.

1954. Are you of opinion that the poisonous element, be it the bacillus or anything else, has already for some time been in the animal before the tuberculosis nodules form?—I am of that opinion.

1955. And that after they have formed, the virus is being carried by the lymphatics or by the blood through the whole body?—Through the whole system.

1956. And that is the ground upon which you act as you do in Paisley?—Yes.

1957. Now, if there is anything useful that you can add to what you have said, be good enough to do it. My friends seem a little puzzled at the distinction you draw between the bad results of using the milk, and the bad results of eating the flesh. Now, I understood you to say that if tuberculosis had only advanced a small way, and if there was nothing apparently wrong with the mammary gland—that is practically the udder—I presume the milk might be taken?—The milk might be taken, but still there is the danger—that is my opinion now.

1958. Your opinion with regard to the milk was as you stated it in the Sheriff Court three years ago?—Yes.

1959. But has further inquiry into the circumstances made by the Committee of the Privy Council and the French Congress tended to modify that opinion?—It has.

Mr. ALFRED ERNEST MAYLARD, *sworn*, examined by
Mr. Ure.

A. E.
Maylard.

1960. Are you a bachelor of surgery and a bachelor of medicine of the University of London?—I am.

May 29, 1889. 1961. And are you surgeon to the dispensary of the Glasgow Western Infirmary?—I am.

A. E. Maylard. 1962. I believe you are extra surgeon to the Sick Children's Hospital, and surgeon to the Glasgow Training Home for Nurses?—I am.

1963. Have you devoted much attention to surgical pathology and bacteriology?—Not so much attention to bacteriology as to surgical pathology.

1964. Did you study bacteriology under Professor Koch in Berlin?—I did.

1965. Did you, on the 9th of May last, go to the Moore Street slaughter-house?—I did.

1966. And were you shown there two carcasses, one of an ox and one of a cow?—Yes.

1967. I believe you made no special examination of the carcasses themselves?—No.

1968. Did you take away parts for examination?—I did.

1969. Will you tell us what part you took of the cow?—A portion of the lung which appeared to me to be diseased, and from the ox a part of the pleura.

1970. You say "that appeared to you to be diseased." What appearances did they show?—The lung showed caseous patches—cheesy-like patches—and small collections of pus—purulent matter.

1971. How would you describe the appearances as seen by the naked eye as compared with the lungs of a human being suffering from tuberculosis?—As much the same.

1972. Did you submit any of these cheesy masses for examination under the microscope?—I did.

1973. For the purpose of detecting the bacillus tuberculosis?—I did.

1974. How many preparations did you submit for examination?—At the first examination I made, I submitted twelve preparations.

1975. Did you discover bacilli in these?—Not in these.

1976. What did you do after that?—Feeling certain from the naked-eye appearances that it was a case of tuberculosis, I went to the slaughter-house again. The carcasses had then been removed to York Street. I took another portion of the lung and submitted that to precisely the same process of staining and so on for the detection of the bacillus, and in every one of these preparations I found the bacillus.

1977. Did you attach importance to the result of that investigation?—I did.

1978. Why?—As showing the uncertainty with which the tubercule bacillus may be found. While a part may be very obvious to the naked eye as being tuberculed, yet one may not find tubercule bacilli present.

1979. *Sheriff Berry*.—How many preparations had you this second time?—I made three. I felt that sufficient, finding the bacillus in each one.

1980. *Mr. Ure*.—So that the failure to find the bacillus in any

preparation does not indicate, in your opinion, the absence of the disease?—Certainly not. May 29,
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1981. Do you consider the finding of the bacillus, to some extent, accidental even in a diseased portion?—Quite. A. E.
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1982. How is that?—The bacillus may have gone to some other region; it may have got away from the part; it may have become disintegrated, mixed up with the other tissues, become unrecognisable.

1983. Will you tell me what you did with the portion you removed from the ox?—I made sections of this with the object of determining, first, whether it had a histological structure of tubercle; and, secondly, with the object of detecting the bacillus.

1984. Will you tell me the result of your examination of those portions which you submitted to histological examination?—These showed distinctly that the sections were tuberculous.

1985. How?—By the structure of the tubercles which were found.

1986. What was the structure; can you describe it?—It consisted of what is described as forming a tubercle, *i.e.*, giant cells, with collections of small round cells.

1987. Do you attach importance to finding that appearance?—I do, great importance.

1988. Why is that?—Because I think it points very distinctly, and indeed unquestionably, to evidence of the presence of tuberculosis.

1989. Do you regard the histological structure of the parts as typical of the disease?—Quite.

1990. And suppose you found the characteristic histological structure, would you be satisfied, even although you failed to detect bacilli?—I should.

1991. Will you tell me the result of your examination of the parts that you submitted to microscopic examination for the detection of bacilli?—In these sections I failed to find the bacillus.

1992. Did Dr. Joseph Coats show you sections that he had taken from the ox?—He did.

1993. Did you see bacilli in these?—I saw the bacilli which he showed me, and was convinced that they were the bacilli of tuberculosis.

1994. In your opinion, were the carcasses of the ox and cow from which you took these specimens fit for human food?—I could not express an opinion on that point until after I had made a microscopical examination. I am not acquainted with the disease in cattle.

1995. What does the presence of a tubercle indicate?—That the animal is affected with tuberculosis.

1996. What produces the tubercle?—The bacillus.

1997. And do the bacilli find their way all about in the carcase of the animal?—Yes.

1998. They are not confined to the tubercles?—No.

1999. Can you tell how they circulate in the animal?—Through the blood.

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2000. Do they get into the lymphatic glands?—Yes.

2001. And may they be there without any visible indication of their presence, even with the microscope?—Quite.

2002. And may the virus of the disease be circulating through healthy organs and tissues in a carcase, even although you do not find it obviously manifesting itself?—Quite.

2003. Then, if an organ or tissue appears to be quite healthy, can you deduce from that certainly that there is no virus present?—You cannot.

2004. Suppose you found gross lesions of the tissue in the carcase, would that all lead you to believe that the virus was in the remaining portion of the carcase, or might be?—It is quite possible.

2005. Did you find indications in both the ox and the cow of lesions?—Yes.

2006. And from that you inferred that the virus might be throughout the whole carcase of both?—Quite so.

2007. Will you tell me whether tuberculosis is a common disease in the hospitals with which you are connected?—Very common.

2008. Can you give me an indication of the proportion that cases of tuberculosis bear to other cases?—In view of this case I looked into the statistics of the Sick Children's Hospital, both statistics of the dispensary and of the in-door department of the hospital; and I find that of the number of cases that came to the dispensary out-door department, about 40 per cent. of the whole number of patients were tuberculous, and of the number of cases presenting themselves at the hospital, about 50 per cent. of the whole cases were tuberculous.

2009. In speaking of tuberculous cases, I suppose you do not confine yourself to cases of consumption merely?—No. I should still further add that these statistics refer solely to the surgical side. The medical side, I believe, might possibly present a higher proportion.

2010. Then, besides consumption, which is one of the forms of tuberculosis, what other forms come under your notice?—Such as I see it surgically, the glands are very numerous affected, the lymphatic glands; the bones very extensively, and the joints.

2011. Have you seen indications of it in the marrow of the bone?—I have.

2012. In what form?—This was in the case of an ox. The bone, which had been sent to Dr. Joseph Coats, contained a large mass of cheesy matter. I took some of this and examined it for the tubercle bacillus, and found a number of them present.

2013. Were they unmistakeably tuberculous bacilli?—Yes.

2014. Do you think that the disease might be communicated by the eating of tuberculous food,—by ingestion, in short?—I do.

2015. To you, as a medical man, does it occur that there is any impossibility in the communication of the disease by the alimentary canal?—None whatever.

2016. Now, you have given us statistics about children; can you give us any statistics about adults affected with this disease?

—I cannot, only it is much more in children than in adults that we see tubercular disease.

2017. You have surgical experience in the Glasgow Infirmary, have you not?—Yes.

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2018. Are tubercular diseases common in your experience there?—Yes.

2019. And in all forms?—In all forms.

2020. Then, you think that a carcass that was affected with tuberculosis, such as the ox was, should not be allowed to go into the market as the subject of human food?—I feel it should most certainly not.

2021. Why?—For the reason I have already stated, that one cannot tell that bacilli may not be circulating through the tissues, which may be perfectly healthy.

2022. Do you offer the same opinion in regard to the cow?—Precisely.

2023. Was it even more affected than the ox?—The part of it that I examined was distinctly more affected than the ox.

Cross-examined by *Mr. Jameson*.

2024. May the reason of your finding no bacilli in the cheesy matter that you examined from the cow not have been that the system had overcome the bacillus there, and that the lesion was in progress of disappearing?—No.

2025. It is the fact, is it not, that you find in *post mortems* in the human subject that tuberculosis has commenced in the lungs and disappears, first becoming cheesy and then getting coated with some cretaceous matter?—Quite.

2026. Did you see anything similar to a process of that kind going on in the lungs of this cow?—Not in the part that I examined.

2027. You do not think that the fact of your getting evidently a tuberclosed part, but the bacillus having disappeared, pointed at all to progress towards recovery as regards the tuberclosed part?—No.

2028. In the progress towards recovery, I suppose the first thing would be for the bacillus to die?—Yes.

2029. And then the tissues gradually recover and heal up, leaving a cicatrix of some sort?—Quite so.

2030. Now, you told us that the bacilli are not confined necessarily to the tubercle, but may circulate through the whole system. In point of fact, are bacilli not very rarely found in the blood of animals?—Very rarely.

2031. Does that not point to this, that they are only in the blood, if they are there at all, temporarily until they find some nidus where they may fasten themselves and propagate?—Quite so.

2032. And is it not therefore quite possible that bacilli which get into the system of an animal or a man—take an animal—which get into the system of an animal, say by inhalation, should fasten upon the lung, which I suppose is the place where, if there is any weakness, they will readily fasten on?—Yes.

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2033. Is it not possible they may fasten there and proceed to live and have their being there, without going further through the system?

2034. *Mr. Comrie Thomson*.—You have omitted the moving.

2035. *Mr. Jameson*.—They do not move.

2036. *Mr. Comrie Thomson*.—You have said, “or having their being.”

2037. *Mr. Jameson*.—Yes, but I omitted the moving. (To witness) The bacillus does not move?—No, the tubercle bacillus does not move.

2038. It has no motion of itself?—No.

2039. So it cannot move about unless it is caught up by some fluid and carried along with it?—Quite so.

2040. Now, assume that this bacillus gets into the lung, I suppose it does not necessarily follow that there will be bacillus in any other part of the system although it is apparent in the lung?—Not necessarily, but there is a very great probability that at any time it may get into the system.

2041. Does not that come to this, that after it has gone on for some time there, it is possible that there may be a break up of a tubercle, and the contents of the tubercle, consisting of the bacillus or the spores, may be taken by the lymphatic vessels into the system?—Yes.

2042. But when that happens, don't you have what is known as general tuberculosis?—Not necessarily.

2043. Not even then?—You may have general tuberculosis as the result.

2044. And if you have general tuberculosis, I suppose that shows itself by emaciation and general depreciation of the whole system?—Generally.

2045. But, apart from bacilli getting away in that way, is it not quite possible, having regard to what you have told me about the human subject, that tuberculosis may, from the outset and throughout, be practically localised in one organ, like the lungs or the mesenteric glands?—It may be so.

2046. And that would leave the rest of the frame of the animal in a healthy condition?—Quite so, if one could with certainty say that it ever was so.

2047. I quite understand that. You say, I understand, that there is always a risk in it being local?—Quite so.

2048. Now, are there not very few cases in the human subject of tuberculosis in the alimentary canal?—I am not quite in a position to speak on that question.

2049. I suppose if tuberculosis is introduced into the human system by means of food, you would find the traces of the bacilli first in the alimentary canal?—By no means.

2050. Where would you find them?—Possibly in the glands leading from the alimentary canal—in the mesenteric glands.

2051. How do they come there?—They get into the lymphatics, and so are carried to the glands in the mesentery.

2052. But I suppose it is much more likely that they are carried out altogether, out through the bowels, when there

are any bacilli introduced into the alimentary canal?—Quite so. May 29, 1889.

2053. That is not nearly such a dangerous form of the communication of disease to the human subject as inhalation, I suppose?—Apparently not. I cannot speak with any certainty upon that. A. E. Maylard.

2054. You have told us, I think, that in the dispensary connected with the Children's Hospital you have found that 40 per cent. were complaints of tuberculosis; does that take in such complaints as scrofula?—Yes, that is considered tuberculosis.

2055. And meningitis?—We do not see these in the dispensary.

2056. Then there are the diseases in the glands and bones and joints. In the case of children, don't these very often come by inheritance?—It depends on what sense you mean by inheritance, whether it is because the child is born predisposed to the disease, or whether it is born actually with the disease in its body.

2057. That is a very difficult question, I suppose?—A very difficult question.

2058. What is your own view about it?—It is developed, I believe, by predisposition.

2059. And the same of tuberculosis?—Yes, but scrofula and tuberculosis are the same thing.

2060. But is the bacillus not different?—No difference whatever.

2061. Quite the same?—Quite the same.

2062. In those cases which came under your own observation, to what did you attribute the presence of the bacillus?—That is impossible to say.

2063. That, perhaps, it is impossible to say exactly, but what do you attribute the presence of these bacilli in these children to, yourself?—These children were of tender age, mostly all young, under twelve.

2064. And not of that class of children who would be getting much butcher meat, if any?—I don't know the condition of the children. Possibly they were not getting a great deal of meat. They may have been getting a great deal of milk.

2065. I quite understand that they may have been getting a great deal of milk, and a great number of them may have been born of unhealthy parents or under unhealthy conditions?—That is so.

2066. With regard to these children, is it not your opinion then that the presence of the tubercular bacilli in them was not due to anything such as eating diseased meat, or diseased flesh I should say, but rather to their getting milk from tuberculous animals or from hereditary predisposition and bad surroundings?—I would say hereditary predisposition, bad surroundings, and milk.

2067. Now, with regard to that cheesy matter that you examined from the marrow of animals, the bacillus you found there might have been the bacillus of scrofula or struma, as well as the bacillus that produces tuberculosis?—It is the same thing, struma, scrofula, and tuberculosis are all the same disease.

May 29, 1889. 2068. And you could not tell whether the disease which accompanied that bacillus was scrofula or tuberculosis in the marrow of these animals?—It was tuberculosis.

A. E. Maylard. 2069. What would you call tuberculosis in the marrow of animals?—This was a caseating mass, a cheesy-like mass, in the centre of the bone.

2070. Is not that rather what you would call a scrofulous affection than anything else, I mean in ordinary medical parlance?—No, I always speak of them as tuberculosis; I do not use the term “scrofula,” nor do I use the term “struma,” I use the term “tuberculosis” alike for all these cases.

2071. And you use “tuberculosis” for phthisis, consumption, tabes mesenterica, and meningitis?—Yes.

Re-examined by *Mr. Ure*.

2072. Would you tell me how you distinguish between general tuberculosis and local tuberculosis? What do you mean by the difference between the two?—Local tuberculosis is where there is just a particular spot, one centre as it were in which disease very markedly manifests itself. General tuberculosis is where the whole system has become affected, showing itself by minute lesions in various parts of the body.

2073. The parts of the ox and the cow in this particular case you would characterise as locally affected with tuberculosis?—Quite so. I only looked at those local spots. I did not examine the carcase with any idea of determining the disease elsewhere.

2074. And even with a pure case of local tuberculosis, it is your opinion that the rest of the carcase may be affected with the virus, and so be dangerous to use?—Quite so; that is precisely my view.

2075. Now, you mentioned amongst the causes that produce tuberculosis in the children who come under your notice, hereditary predisposition. That would mean, I suppose, that their grown-up parents were tuberculous?—In all probability.

2076. And, of course, they may have derived their disease from infection?—Quite so.

2077. And might the disease which manifests itself in the lungs find its way through the alimentary canal—in fact, the infection may be by ingestion, as well as by inhalation?—Yes, I believe that is possible.

Dr. Jos. Coats. Dr. JOSEPH COATS, *sworn*, examined by *Mr. Comrie Thomson*.

2078. What is your age?—I am 43 years of age.

2079. You are pathologist to the Royal Infirmary, and also to the Western Infirmary?—I was pathologist to the Royal Infirmary. I am now pathologist to the Western Infirmary.

2080. And you for many years past have been a lecturer on pathology, and an examiner on the subject?—For between nineteen and twenty years, I think.

2081. Do you examine in pathology for the University?—I do.

2082. You are the author of a Manual of Pathology, and a work on Phthisis Pulmonalis?—Yes.

2083. On the 9th of this month, did you examine in Moore Street slaughter-house the carcasses in question?—I did.

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2084. One of them was a cow?—Yes.

2085. Tell me what you saw upon the pleura of the cow?—Both pleuræ were considerably thickened—the seat of a new formation which to my eye was distinctly tubercular.

2086. Was that especially in the lower part?—It was. Then I examined the lungs, and they were the seat of a large number of tubercular nodules.

2087. But in that newly-formed tissue in the pleura were there villous projections?—There were.

2088. Were these pendulous parts sometimes of considerable size?—Some of them were of considerable size.

2089. And in the larger ones did you find nodules?—There were obvious pearl nodules, which are typical of bovine tuberculosis.

2090. Were they of some size?—Of some size.

2091. The size of a pea?—Yes, a small pea.

2092. Then, from these appearances did you form the opinion that bovine tuberculosis affected the pleura of that animal?—I do hold that opinion.

2093. Then as to the lungs, what did you find in them?—I found a large number of nodules all about the same size.

2094. What sort of consistency did they have?—They were rather hard and crumbly, many of them.

2095. What were these evidences of?—They were also evidences of tuberculosis.

2096. Did you proceed to submit any portion to microscopic examination?—Yes, I examined both the pleura and the nodules in the lungs microscopically.

2097. And in the portions taken from the softened parts, from the nodules in the lungs, what did you find?—I found abundant tubercular bacilli.

2098. Did you look at the mammary glands in that carcase?—I did.

2099. What did you find?—When I cut into the mammary glands yellow plugs oozed out, which were virtually pus to my eye.

2100. Did microscopic examination of these glands disclose inflammatory action?—Very marked inflammatory action.

2101. Was that both in the tissue of the gland and in the milk ducts?—It was very marked in the tissue of the glands, and the products of the inflammation had passed into the milk ducts.

2102. But I understand you were not satisfied from anything you saw that that inflammation was tubercular?—No; there was nothing specifically tubercular, so far as my observation went.

2103. Now, the other carcase was that of a young bullock?—Yes.

2104. What did you find in the left pleura of that animal?—I found the pleura also thickened, with slight projections, very slight.

May 29, 1889. 2105. Was it something like what you found in the cow?—
Yes, but less advanced.

Dr. Jos. Coats. 2106. And to the naked eye they did not show the full development of the nodules?—To the naked eye, looking closely, one could see what I took to be tubercular nodules.

2107. At all events, could you see that the tissue was not homogeneous?—I saw that.

2108. And in the general grey basis were there white spots?—There were.

2109. A considerable number?—Large numbers.

2110. And were they about the size of miliary tubercles?—Yes, they were about that size.

2111. You made a microscopic examination of that portion of the animal also, with what result?—I found that histologically, that is, in their structure, they were undoubtedly miliary tubercles. I also examined for the tubercular bacillus, and I found the bacillus present, but not in large numbers.

2112. As to the appearances in the pleura, did you find the giant cells that are characteristic of the disease?—Multitudes of them.

2113. So that there is no doubt that there was tuberculosis present there, although in an early stage?—Not the slightest doubt.

2114. Then, in the lungs did you find a nodule?—Yes; and I saw a nodule similar to those in the cow's lung.

2115. And did Dr. Russell and Mr. Fyfe bring you one which they stated they had removed from the lung?—They did.

2116. Were both of these nodules tubercular?—I judged from the naked-eye appearances that they were both tubercular.

2117. Then, these were submitted to the microscope, with the result that you mentioned, that you found tubercular bacilli in them?—That is so.

2118. Did you find them also in the diseased tissue of the pleura?—I did.

2119. Did you cut into the tissue, and scrape the juice, and submit that to the microscope?—I did.

2120. Were these bacilli quite unequivocal?—Quite unequivocal.

2121. You have had large experience, I believe, in examining tubercular lesions in the human subject?—I have.

2122. And you have had some experience of bovine tuberculosis?—I have.

2123. Are the lesions similar in the one and in the other?—They are essentially similar, but not identical.

2124. What appearance is it that most readily determines tuberculosis?—The structure, consisting essentially of giant cells and smaller cells, called epitheloid cells, round them.

2125. Are these epitheloid cells on the surface?—No; they form a component part of the miliary tubercle.

2126. If you have the miliary tubercle, with the giant cells, do you consider that sufficient to satisfy you that tuberculosis is in existence?—Yes, I take it to be sufficient.

2127. The search, of course, for the bacillus is a much more laborious matter?—Very much more so.

2128. It is a very minute microbe?—Very minute.

2129. And difficult to detect unless it is present in considerable numbers?—It is.

2130. But in both of these animals you had no difficulty, I understand, in detecting it?—I had to search diligently, but I found it unequivocally.

2131. Now, do you consider that these carcasses, or either of them, were fit for human food?—I don't think they were.

2132. Do you consider that the carcase of any animal in which tuberculosis exists, even to the extent to which it had gone in either of these two animals, is fit for human food?—No.

2133. Am I right in supposing that you are not proceeding in that opinion upon the footing that the flesh is all necessarily less nutritious?—Not on that footing at all.

2134. What is the footing upon which you go?—I go on the footing, for one thing, that the bacillus is the agent of disease, not only in bovine tuberculosis but in man, and that in an animal that is tubercular the distribution of the bacillus is very difficult to determine, and quite beyond the possibility of thorough detection.

2135. Is it the same minute microbe which produces tuberculosis in man and in the ox?—It is.

2136. Can you assert this of your own observation both from the microscopic appearances, and also from experiments that have been conducted by other scientific men?—I can.

2137. Now, so far as we know, where is the chief place, if not the only place, of multiplication of this microbe?—In living animals.

2138. Is it found to grow except at the temperature of the human body?—It only grows at a temperature approaching that of the human body.

2139. Is it, in your opinion, a necessary deduction from that that practically, in all cases, it is derived by one animal from another animal?—That is so.

2140. So that, in your opinion, tuberculosis is directly and necessarily a means of propagating the disease?—That is so.

2141. It has been suggested to us from the other side that the ingestion of food containing tubercular matter is calculated to give rise to tuberculosis. What do you say to that suggestion?—

2142. *Mr. M'Kechnie.*—I don't think we suggested that—not "containing tubercular matter."

2143. *Mr. Jameson.*—Put your question apart from the other side altogether—without reference to us.

2144. *Mr. Comrie Thomson.*—I can dispense with your assistance. What do you say as to the possible communication by the ingestion of food?—I say that my own experience in multitudes of cases shows that tuberculosis is communicated by what is taken into the mouth and the alimentary canal, at any rate.

2145. It follows from that that it is unsafe to allow a tuberculous animal to be used for human food?—Undoubtedly.

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2146. But do you think that the risk is obviated by merely removing those portions of the animal which are visibly affected by tuberculosis?—I don't think so.

2147. Will you kindly favour me with the grounds of that opinion?—Well, for one thing, tuberculosis occurring in the pleura must be caused by bacilli carried by the blood to the pleura, and if carried by the blood to the pleura you cannot tell where they are carried or where they are not carried. They are carried throughout the body.

2148. Not to interrupt you, may I take it that the bacillus must have been for some time in the body somewhere before the tubercles appear?—It must undoubtedly precede the visible appearance—the visible appearance being the effect of its working, and probably of its working for some time.

2149. So that the bacillus is always concealed in a visible lesion?—Undoubtedly.

2150. And in parts where there is no apparent harm going on?—Yes, necessarily so.

2151. And no human being can tell where he may be?—No one can tell where he goes to, at anyrate.

2152. Does the bacillus, so far as we know his habits, readily pass to the lymphatic glands?—It is a regular process that he passes to the lymphatic glands.

2153. The lymphatic glands are for the most part surrounded by fat?—Yes, many of them are, and many of them are stowed away in odd corners of the body.

2154. And the bacillus is liable to escape observation?—Undoubtedly.

2155. And the lymphatic glands are numerous?—Yes.

2156. It would be a difficult matter, would it not, to have them entirely removed from the carcase?—A very difficult matter; it would imply dissecting the whole carcase.

2157. Are you aware whether the experiment has been tried of introducing the disease in animals by the juice of muscle and other parts of the flesh which are not yet visibly affected with tuberculosis?—That experiment has been frequently made.

2158. With what result?—With the result that, in a certain proportion of cases, tuberculosis has resulted.

2159. Have there been instances in which the bacilli were so scarce as not to be detected microscopically where inoculation has shown that they must have been present?—Yes, that applies to experiments of various kinds.

2160. I mean to say that it is so small and difficult to detect that, where the microscope failed to detect it, the inoculation shows that it must have been there?—Yes, quite; that is undoubted. It is universally recognised that inoculation is a much better test of the presence of the bacillus than microscopical examination, because it is much surer.

2161. Then, is it ascertained that the bacillus has a considerable power of propagation—it has spores, I understand?—It has spores.

2162. They are visible upon the creature's body under the microscope?—They are visible as part of the body.

2163. And they get carried away even where the bacillus may remain?—Yes. The spores themselves are so minute that they are of much greater difficulty in detection than the bacillus, but it is admitted that the bacilli break up and the spores are set free.

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2164. I think it is supposed that they propagate both by spores and by fission?—Yes, that is so.

2165. Does any reason occur to you why, even if the whole tuberculous parts can be removed, you would still have the carcase remaining dangerous for food?—I think, in the mere removal of the tubercular part, you are, as it were, inoculating other parts. If you use a knife to cut away a tubercular part, your knife is carrying the bacilli to other parts.

2166. It is a solid body, very minute, which can be transported easily?—Yes.

2167. I have before me an illustration which is very graphic, and I think you should give it to his Lordship, about the dusting of pepper?—Yes; it occurred to me that if one were to dust a square foot of the pleura of an animal with pepper, and ask a man to cut it out, and then cut up the animal, you could not ensure that any part of the animal would be free.

2168. And a grain of pepper is a perfect boulder compared to a bacillus?—It is so.

2169. According to the best of your judgment, is it your opinion that all animals suffering from tuberculosis are, in all their parts, unfit for human food?—That is my opinion.

2170. And you arrive at that opinion after taking into account the economic side of the question, that there will be loss, possibly, of good food?—Undoubtedly.

2171. There is, may I take it, very serious doubt whether any part of such a carcase may not be tuberculous, and may not communicate disease; but you think that the benefit of the doubt should be given to the public?—Yes.

2172. About the effect of cooking,—assuming that there was mischief,—about the effect of roasting and boiling, what observation have you to make upon that?—The effect of cooking is too uncertain to be trusted. Undoubtedly the exposure of the bacillus to boiling water for some time would be a safeguard, and would destroy its vitality, but you cannot ensure that that is always done.

2173. And in roasting according to ordinary custom, there is always a portion of the roast which is what we call underdone? Yes, quite so.

2174. And the juice of a roast is often blood whose albumen is not coagulated, not having been at boiling point?—Albumen coagulates considerably under boiling point.

2175. How much?—It is under 160° . I cannot say how much.

2176. You would think it would take 212° to destroy the bacillus, and that only after a little while?—To be quite sure.

2177. And in roasting you would have no certainty?—No certainty at all.

2178. In the report of the Privy Council Committee, they say

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that the bacilli have been known to die after exposure to a temperature of 107·5, after several weeks—practically, of course, that never occurs in connection with cooking?—No, certainly not.

2179. Are you aware that this question has been maturing of recent years in consequence of scientific research and experiment—It is so. It can only have been so, because the bacillus was only discovered in 1881.

2180. You are aware that last summer there was a congress of surgeons and veterinary scientists held in Paris which arrived at a certain conclusion, and which has been followed by a decree of the French Government?—Yes, I understand so.

2181. And you are aware of the terms of the report of the Privy Council Committee last year?—Yes.

2182. Do you agree with the resolutions at which these learned bodies arrived?—I do.

2183. You have been paying special attention to this matter of tuberculosis lately?—I am continually paying attention to it.

2184. I have had put into my hands what appear to be the proof sheets of a work by yourself, presently passing through the press?—Yes.

2185. And the pages that I have here are all upon tuberculosis?—Yes.

2186. And these contain the conclusions at which you have arrived?—Yes. I thought it worth while handing this in, because it gives definitely my ideas six or eight months ago, when I wrote this—that the bacillus frequently finds entrance by the mouth, and by the intestines.

Cross-examined by *Mr. Jameson.*

2187. You say in this proof “the commonest seat of tuberculosis is the lungs, and entrance is here obtained by the inspired air by inhalation”?—Yes, that is the most frequent; you will see that there is an exception to that in the case of children.

2188. We will take the lungs first as we are talking about them. With regard to the lungs, the bacillus gets into the lungs by inhalation, and may take up its abode there?—Yes.

2189. And so long as it does not disintegrate and is absorbed by the lymphatic vessels its action will be confined to the lungs?—Of course, so long as it does not spread.

2190. And I suppose if some of the bacilli are taken up by the lymphatic vessels and get into the blood, it is not improbable that they may be destroyed by the corpuscles in the blood?—I don't think they are destroyed by the white blood corpuscles; there is no evidence that they are so destroyed; they are deposited in the tissues, and if destroyed they are destroyed by the fixed cells of the tissues.

2191. Are they not found in the blood at all?—If in very large numbers, they have been found in the blood.

2192. But it is very rare to find them in the blood?—It is rare to find them in the blood, because in proportion to the amount of blood the chances are that one would miss the bacillus unless it was very abundant. I have found it myself in the blood.

2193. Practically, tuberculosis till it is generalised by getting through all the tissues is confined to some particular locality, such as the lungs or some glands?—There is nearly always a certain leakage of the bacillus into the lymphatics and into the blood.

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2194. But what becomes of it, because you are aware of many cases, are you not, in the human subject where tuberculosis has been stopped after going on to a considerable extent and where people recovered?—Yes.

2195. These people could never have been diseased throughout with general tuberculosis?—It depends upon what you mean by the term “general.”

2196. The way it is used in this report that you have been referred to, or in other words, as opposed to local tuberculosis?—What happens, in my belief, is that the bacillus is carried to different parts of the body, and in some cases, and especially in children, it gets leave to produce disease, but in other cases the constitution is so strong as to prevent it multiplying.

2197. The constitution kills it, in other words?—Yes, with this proviso that I believe in many cases multitudes of very minute lesions, insignificant practically, are produced by the bacillus lodging in different parts.

2198. About this particular case, did you examine the flesh of these animals apart from the internal parts, the lungs and viscera?—I did not.

2199. You examined it neither generally nor microscopically?—I did not.

2200. So that you do not say from any inspection of the parts of the flesh which would be sold for food whether these were fit for human food or not?—No, not on that ground.

2201. You say that the only great multiplication of bacilli is in animals, and it is always communicated by one animal to another; is not by far the most frequent communication of it by the sputum?—I am not prepared to admit that.

2202. Is it by exhalation from one animal to another and inhalation?—I don't think it is in the breath.

2203. What do you consider the mode in which one animal, as a rule, communicates this disease to another? is it not by the sputum?—Probably that is the most frequent way. I did not apprehend your question. I understood you to say, was that virtually the only mode.

2204. That would be consistent with what you say, that the commonest seat of the bacillus is the lungs, to which entrance is obtained by the air?—Yes.

2205. Is it not very uncommon to have tuberculosis in the alimentary canal?—It is, as a primary disease, uncommon.

2206. It gets there after being in the lungs?—In most cases.

2207. You would say, with regard to tubercles in the mesenteric glands, that the bacillus had more probably got there by the blood than by anything coming in through the alimentary canal?—No, quite the contrary. Tuberculosis of the mesenteric glands is very common, apart from tuberculosis of the intestines, and in that case the bacillus has got to the mesenteric glands

May 29, 1889. from the intestines because the mesenteric glands are in immediate communication with the intestines, and without producing tuberculosis of the intestines.

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2208. Have you found tuberculosis also getting to the mesenteric glands from the lungs?—It may—that is to say, it may pass from the lungs to the intestines by that road, and get to the mesenteric glands.

2209. Do you mean it must go through the intestines first?—Yes.

2210. Before it reaches the mesenteric glands?—Yes, that is as a general rule—it may possibly get by the blood, of course.

2211. Have you known cases of tuberculosis in the alimentary canal?—Multitudes—do you mean primary?

2212. Yes, commencing with the alimentary canal?—I cannot specifically answer that question, but I think I have. It is uncommon.

2213. Have you ever met with a case in which you could trace tuberculosis in the human subject from the eating of tuberculosed flesh?—I am not the least likely to meet with proof of such a case.

2214. You have not?—No, I have not.

2215. Have you ever heard of such a case?—No.

2216. Or read of one?—No.

2217. Have these experiments that were carried on with tuberculosed animals, been carried on, in the first place, with raw juice?—I understand so.

2218. And from juice which the experimenter took care was largely impregnated with virus?—I do not understand that at all.

2219. Do you think not?—No.

2220. Do they take that almost always from animals in which there is generalised tuberculosis?—But that does not imply that the flesh is impregnated. Even generalised tuberculosis would not imply that. The experiment only showed positive results in a certain proportion of cases, and it is not intended to represent that the flesh is deeply impregnated. If it were so, there would be no need for a trial, as the case would be so clear.

2221. In all these cases where they took the juice, did they inject it into the peritoneum?—In most cases they did.

2222. That is a very different thing from eating flesh and it passing into the alimentary canal?—Yes.

2223. If you add to that that the flesh is cooked instead of being raw, and that the alimentary canal is subjected to the digestive juice, does not that show that these experiments cannot be compared with meat that comes from the butcher's stall, as it is put there?—In answer to that question I would say that the alimentary canal, like the peritoneum, is undoubtedly capable of absorbing the bacillus tuberculosis, and also that the juices of the alimentary canal are proved not to be fatal to the bacillus.

2224. They are not fatal in every case?—They are not generally fatal, as shown by the frequency of tuberculosis of the intestine following tuberculosis of the lungs.

2225. Is not the gastric juice fatal to the bacillus?—No.

2226. What do you say about cooking?—You can never ensure that it is efficient. May 29,
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2227. But if people took care that they cooked their meat?—You would need to appoint a public cook. Dr. Jos.
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2228. If the meat is thoroughly cooked you destroy the bacillus?—If you are fond of underdone meat you might call it properly cooked.

2229. I mean, cooked up to a temperature of 212 degrees?—If you could ensure that the public would do that, then it would be safe enough.

2230. You said that your experience in multitudes of cases showed that tuberculosis commenced by way of the mouth and the alimentary canal; what cases were these?—One of the commonest tubercular diseases is tubercular glands in the neck, and I think there is no question of the bacillus tuberculosis reaching the glands in this case from the mouth. These glands are in direct connection with the mouth, and that is the road which the bacillus would go.

2231. Is that by inhalation or by eating food?—It may be by either, as the mouth takes either air or food.

2232. Then about the alimentary canal?—Tuberculosis of the mesenteric glands is a very common primary form of tuberculosis apart from any tuberculosis elsewhere, especially in children, and even in adults I have frequently seen some of it, and there it must be by the alimentary canal.

2233. In the multitude of cases that you have had of that description, have you been able to trace one to the child or adult having eaten tuberculosed flesh?—I never endeavoured to trace it.

2234. Would it not be interesting?—It would require a regiment of inquirers. They were only cases that I examined pathologically, and I had no means of inquiring.

2235. In children it may be due to tuberculous milk?—Yes.

2236. And that always being taken in a raw state, there is nothing to kill the bacillus?—No.

2237. In these cases where bacilli were found to be present by inoculation, was there generalised tuberculosis?—There is always to begin with localised tuberculosis, and it becomes generalised.

2238. But in all those cases where the microscope had failed to discover the existence of the bacilli, were these all cases of generalised tuberculosis, as you call it in your book?—I don't know—I cannot say; I don't suppose so.

2239. You were suggesting to my learned friend or he suggested to you that you might be carrying the bacillus to other parts by cutting off the part that is affected?—Yes.

2240. That is from the illustration you gave us—if you take a portion of the lung and try and cut a piece, and say “Now, that is affected, and I will throw it away”?—I was thinking more of the pleura.

2241. But suppose you take out the inside of the cow, or the membranes and viscera, and leave nothing but the two sides of the meat, you would get rid of it, pepper and all?—In taking out

May 29, 1889. these parts you must do it by cutting, and the knife must come in contact with the parts you leave behind.

Dr. Jos. Coats. 2242. But if you are careful?—I don't think it is possible. There are always two sides to a cut.

2243. Can you not just tear out these membranes after you have got away the more solid parts inside?—If you try to take away the pleura of a tubercular animal, I don't think you will succeed.

2244. You don't think it is possible to leave clean meat?—With cutting, no.

2245. Have you ever tried such a thing?—I have tried it often enough in the human subject.

2246. The membranes of cattle are very much tougher than those of the human being?—Yes.

2247. Leather is a little thicker than skin?—Yes.

Cross-examined by *Mr. McKechnie*.

2248. Did you examine any of the lymphatic glands of the bullock except those that you have stated?—I looked at the lymphatic glands.

2249. At all of them?—Certainly not.

2250. At which of them?—I looked at the lymphatic glands of the trachea. It looked to me as if some of these had been removed before I went. I found only one small gland, but I should expect to see several.

2251. Did you examine for bacilli in that gland?—I am not sure; I think not.

2252. Why?—I did not see any evidence of tuberculosis.

2253. You saw no evidence of tuberculosis about the bullock except in the mesenteric glands?—I did not examine any mesenteric glands. I did not find it in any glands.

2254. Did you find bacilli in any of the lymphatic glands of the bullock at all?—No.

2255. And none in the lungs of the bullock?—Yes, in the nodule that Dr. Russell and Mr. Fyfe brought me.

2256. The bacilli found in the bullock might have been transferred in cutting up the cow?—No.

2257. You have been trying to make us believe that the knife carries them; do you disown that now?—I disown altogether your application of it. I found the bacilli inside giant cells, which proves that they were not transferred.

2258. Where were those giant cells?—They were in the pleura, and deep in the pleura, because I made a cut into the pleura.

2259. When did you first make the acquaintance of this particular bacillus of tuberculosis?—Immediately after Koch published his results.

2260. In 1881?—He published them in 1882.

2260-1. And the bacillus is barely seven years old?—Well, that is so.

2261. Have you heard recently that the tubercular bacillus has got a rival just the other day?—Not seriously.

2262. But you have heard of the rivalry?—I don't think I have.

2263. Not seriously?—If it had been seriously I would have heard of it. May 29,
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2264. But you said that you had heard of it, but not seriously; have you heard of an organic alkaloid?—Oh; that is what you mean. I thought you referred to a bacillus. Dr. Jos.
Coats.

2265. Have you heard of this creature called sepsin?—I have heard of it hundreds of times.

2266. Was it discovered by Bergmann within the last twelve months?—No; I have known of it for years. Perhaps he has discovered a new sepsin.

2267. Is it an organic alkaloid?—Yes.

2268. It can be isolated from putrescent matter?—Yes.

2269. Or matter in a state of putrescent change?—Yes.

2270. In albumen passing into water?—Albumen does not pass into water.

2271. How is water eliminated from albumen?—Not by albumen passing into water.

2272. But by water passing out of it?—I suppose so; that is a process.

2273. That is a process that goes on in the living body?—I suppose so, in the same sense that you take in and give out water.

2274. Is this particular alkaloid formed when the water is passing from albumen?—I must say that there is no connection.

2275. Is not the particular alkaloid so formed?—I should say not.

2276. Is it not the case that the bacillus is rather the concomitant of an organic change than the cause of it?—No.

2277. Have you never heard that suggested before?—There are some people who suggest it, but I don't think scientific people take them seriously.

2278. Who are the people that suggest it?—I don't know that I can mention names.

2279. You told us that scientific men do not take them seriously?—Yes.

2280. Are they in the medical profession?—I suppose so.

2281. Have you heard of Bergmann?—Yes.

2282. Have you taken him seriously?—Yes, as having done chemical work.

2283. It is the work of chemistry to discover those small organisms?—Not microbes; that is the work of pathologists.

2284. Have you heard that Bergmann, by a chemical process, was able to isolate this sepsin?—It has been isolated by him and others. It is a substance like morphia in some respects.

2285. A very deadly substance?—Yes.

2286. If you injected that substance under the skin of either of these animals when they were alive, would you not have produced the appearances that you noticed in the bullock?—Certainly not.

2287. Or any such appearances?—Not in the least.

2288. Have you known of such injections?—I know of experiments being made by these animal alkaloids, and the effect is simply to produce a poisoning.

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2289. Do not medical men regard the sepsin as the cause and the bacillus as the concomitant?—There may be some medical men who do that.

2290. But they are not worth counting?—No.

Re-examined by *Mr. Comrie Thomson*.

2291. If my friend is serious, this has been sprung upon us for the first time?—It is all nonsense.

2292. It sounded uncommonly like it; my friend has been imposed upon by some one. With reference to the question of the tubercular bacillus, is there any serious idea in the profession that the existence of that creature is a mistake and that it does not exist?—I think it is quite possible that there are men educated under a different system, and who all their lives have been thinking of tuberculosis from a different point of view altogether. There are some honest men who cannot get the idea into their minds, and who do not accept the theory of the microbe at all.

2293. And who have the old theory about the origin of tuberculosis?—Yes.

2294. Which was dissociated from an organism altogether?—Yes, quite so.

2295. Is it not understood that the bacillus itself produces alkaloids?—Yes.

2296. What is an alkaloid?—It is a substance, a base chemically produced, and generally evolved by a living organic being. For instance, morphia is produced by the poppy plant. It is evolved and produced as a chemical substance, a base which combines with an acid to form a salt by the living vegetable substance.

2297. Is it understood that the alkaloids which are formed by the bacillus are noxious to the human frame?—Undoubtedly.

2298. You have to get your bacillus before you get the alkaloid?—Yes.

2299. What is sepsin?—It is an alkaloid.

2300. Is it known as an alkaloid produced by the bacillus of putrefaction?—You can call it a microbe—a microbe of putrefaction.

2301. Does the fact that you are not aware of any case of primary tuberculosis having been seen in the alimentary canal at all affect your view that putrefaction may be produced by ingestion?—I should like the answer to that to be rather longer. My experience is this, that tuberculosis is produced in the alimentary canal very frequently in cases of consumption, where the sputum coming from the lungs loaded with bacilli gets into the stomach and on into the intestine. But where a few bacilli are introduced, as in food, you are more liable to have the glands affected, as the bacilli are absorbed by the intestine and carried to the glands.

2302. But you say that, in your opinion, tuberculosis may be introduced into the system through the alimentary canal?—Yes.

2303. Would the alimentary canal be the first place where the tuberculosis would show itself?—Not necessarily.

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2303-1. You did not find that?—No.

2304. Does that alter your view that tuberculosis is introduced into the system by food?—It does not alter my opinion in the least.

2305. Is it the case that there is a practice of delicate children having shredded raw meat administered to them?—Yes.

2306. And also the juice of meat?—Yes, I heard of a case the other day.

2307. *Mr. Jameson.*—Do you medical men think that is a proper or safe thing to give to children?—I presume that precautions will be taken. The whole tubercular controversy is since 1881. I presume that these juices are really made from wild cattle, which are very seldom troubled with tuberculosis.

2308. Do you mean cattle in America?—Largely.

2309. In the American reports from Chicago, it is proved that there is far more disease in the cattle passed in Chicago than there is in this country?—I know the general statement that prairie cattle have no tuberculosis.

2310. Here is the report by Dr. Dudley, health commissioner, and he says that the prairie meat is affected with various diseases. Don't you think it a very dangerous practice to give children shredded meat or meat extract?—I think if proper precautions are taken there is no harm.

2311. You would need to have the beast examined when alive?—It should not be passed if there is any visible tuberculosis. You cannot base any argument on a thing that has escaped detection.

2312. Are there no spores which may be contained in raw meat, such as the germs of various intestinal worms?—No; the germs of intestinal worms do not go into the meat. You refer to trichina.

2313. Is that not a very dangerous worm and are there not also flukes in sheep?—Yes.

2314. Is there a great variety of these worms?—There are several.

2315. A hundred species?—No; nothing like it—about half-a-dozen probably.

2316. Is it not a common thing to give children raw meat?—I am not able to gauge the practice of medical men; but I presume it is tolerably common.

2317. Do you suggest that tuberculosis is due to any appreciable extent to children getting raw meat?—I cannot offer any opinion upon that.

2318. You don't suggest it?—No; I do not suggest it specially.

2319. *Mr. Comrie Thomson.*—You still adhere to your statement that the general belief is that tuberculosis does not prevail to any extent in prairie cattle?—That is the general belief.

Professor WILLIAM LIMONT, sworn, examined by *Mr. Ure.*

Prof. W.
Limont.

2320. Are you professor of histology and physiology in the Glasgow Veterinary College?—Yes.

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Prof. W.
Limont.

2321. Are you a bachelor of medicine of Edinburgh University, and a fellow of the Faculty of Physicians and Surgeons here?—

Yes.

2322. Did you, on 9th May, go to the Moore Street slaughter-house and see two carcasses, one a bullock and one a cow?—Yes.

2323. Did you examine them?—Yes.

2324. Can you tell me what the appearances were, first of the cow, and then of the bullock?—Both lungs of the cow showed a great collection of tubercles in the caseating stage.

2325. Anything else?—Nothing particular.

2326. What did that indicate to you?—Tuberculosis of some standing. In the thorax, round the diaphragm, and round the ribs, we had evidence of inflammatory deposit showing at the same time nodules which I took to be tubercles.

2327. Is that all you observed in the cow?—Yes.

2328. Then the bullock?—The pleural covering of the lung was inflamed, and had the same inflammatory deposit, and the same appearance of nodules.

2329. Indicating that the carcass had been suffering from tuberculosis?—Yes.

2330. You had no doubt about that in the bullock?—No doubt about it. The other parts were still more conclusive. The pleural covering of the diaphragm and the adjacent ribs, on both sides, was affected.

2331. Do you know what causes tubercles?—The tuberculosis bacillus.

2332. It must be there before the tubercle makes its appearance?—Yes.

2333. Did you have submitted to you by Mr. M'Geoch a portion of the prepectoral gland, and of the diaphragm of the bullock?—I had the prepectoral, and some portions of tissue.

2334. Was it Mr. M'Geoch who brought them, and you conducted the investigation together?—Yes.

2335. Did you submit the portions so brought to you to the microscope?—I examined the prepectoral gland.

2336. What idea did you form?—I saw characteristic tuberculosis bacilli in the two specimens which were prepared.

2337. Did that confirm your opinion that the bullock was suffering from tuberculosis?—Yes.

2338. Do you consider that the carcasses of both animals were fit for human food or not?—I considered that they were not.

2339. Neither of the carcasses?—Neither of them.

2340. Why so?—Because both animals were suffering from acute tuberculosis, an eruption of long standing.

2341. Although the tubercles may develop themselves in one part, may the virus be spread through the carcass?—Yes, certainly.

2342. Do you think that is a scientific fact in your opinion?—Certainly.

2343. The bacilli may be carried through the different parts of the carcass, in your opinion?—Certainly.

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2344. In the blood stream?—Yes.

2345. And do they lodge in the lymphatic glands?—That is one way they lodge.

2346. And all that may occur without any outward and visible sign?—At the very beginning.

2347. But you may have the bacilli, may you not, in different parts of the carcase without any outward and visible signs of their presence?—Certainly.

2348. In your opinion is the disease communicable to man from the animal?—In my opinion it is.

2349. By ingestion as well as by inhalation?—Yes, in my opinion.

Cross-examined by *Mr. M'Kechnie*.

2350. How old are you?—Thirty-four.

2351. And you say you are a professor in the Glasgow Veterinary College?—Yes.

2352. That is Professor M'Call's own college?—Yes.

2353. It is just his college?—Yes, it is like all the others in this country.

2354. Does "Professor" in that college just mean assistant to Professor M'Call; is that the English of it?—If you like to put it that way.

2355. I am not trying to take you down at all, but that is the fact, that you are just an assistant to Professor M'Call in teaching veterinary science?—No, I do not assist him in teaching.

2356. I suppose he could not teach your subject?—I could not teach his.

2357. Do you help him in his general work?—No.

2358. How long have you been there?—Six or seven years.

2359. Do you know that it was his practice to condemn the whole of the carcase of cattle affected with pleuro-pneumonia at one time?—I do not.

2360. Do you know his practice with regard to the carcasses now?—I never asked him. I really do not, because I have not asked him.

2361. You are standing there on oath—and you don't seem to appreciate it very much—do you swear that you don't know?

2362. *Mr. Comrie Thomson*.—This observation is improper, and ought to be withdrawn.

2362-1. *Witness*.—I do.

2363. *Mr. M'Kechnie*.—You say that this disease can be communicated by ingestion from animals to man?—That is my opinion.

2364. But on what do you found that opinion?—That is the whole case for the prosecution.

2365. What do you found your opinion on?—On a vast collection of observations.

2366. Upon any experiments by yourself?—No.

2367. Or any observations made by yourself?—Oh, yes.

2368. What is your own observation?—In the first place, I

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 Prof. W. Limont. know that man is one of a number of animals, and closely resembles them in many respects, and I have observed that animals are certainly infected by ingestion.

2369. Such as?—Well, I have seen rabbits that were brought from a farm where all the cattle and many of the other animals were affected with tuberculosis, and I have found the disease just in the place where you would expect to find it.

2370. Did these rabbits get it by ingestion?—I believe so. I used my anatomical and physiological knowledge, and I believe they did.

2371. Did they get it by ingestion?—Yes.

2372. Of food?—Of food containing the bacillus.

2373. Such as milk?—Grass.

2374. Do you know anything except that they were sent to you, and that they had the disease?—Yes, I do.

2375. What else do you know?—I know that the tenant of the farm had a dispute with his landlord, and said he could not raise stock, and that they got affected with tuberculosis.

2376. From the rabbits?—No.

2377. From what then?—I did not trouble myself to ask about that. I confined myself to what I had to do, which was to examine the rabbits and report.

2378. My question was as regards the communication of this disease by ingestion; you said that you could speak of that from your own investigation—give me another case equally relevant?—If you watch a human patient in the last stages of consumption, you notice that he has to swallow a great deal of his spittle, and if you open him after death you will find, in a very large proportion of cases, that the small intestines are affected with tuberculosis.

2379. Have you done that?—I have seen it at a *post mortem*.

2380. And you inferred that he got tuberculosis from ingestion?—Yes.

2381. Have you a nearer case than that?—Not of my own observation, but I can give you many much nearer.

2382. From the observation of other people—is there such a thing as generalised tuberculosis?—Yes, all degrees of it.

2383. Is there such a thing as local tuberculosis?—Yes.

2384. Will you tell me what is the difference between the two?—It depends very much upon the man who uses the terms.

2385. Suppose we depend upon yourself, what difference do you make between the two?—What I should call local tuberculosis would be a case like this—if you open an animal and find a lung containing tubercles of some standing and age, I don't care how many, and you find that the pleura covering the lung is quite healthy, and you examine all the other tissues of the body and find them healthy, you would say that was local.

2386. In such a case as that the animal might recover?—The man might, but not the ox.

2387. You would not give him time to recover, because you kill him; but local tuberculosis is recovered from?—Yes, by man.

2388. And you cannot say that it would not recover if you let the

ox live long enough?—I have seen hundreds of cases, and I never saw a case with evidence that it could recover. May 29,
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2389. But the animal was dead?—I have seen them killed for other things, but it was always the same. Prof. W.
Limont.

2390. In the case of local tuberculosis, as understood by yourself, would you condemn the whole carcase or only the diseased part?—I am not a bigot; if you take out the local part there is a risk.

2391. What would you do?—I am glad to say that I am not called upon to decide.

2392. You have come here to decide—you have come here to give evidence whether the flesh of such an animal would be unfit for human food?—Yes, I have. I have formed the opinion that there is a risk, and I weigh that against other considerations.

2393. Supposing you were inspector for some place far away from Glasgow, what would you do?—If I was inspector where there were very few of us, and we had the money, I should destroy it.

2394. You think that the rich should not run the risk. If you were inspector for Glasgow, what would you do?—If it was local, and not much of it, and if some competent pathologist examined it, I would be inclined to pass it.

Re-examined by *Mr. Ure*.

2395. Do you think that in every case where the carcase is locally affected, there is a risk?—Yes; there is a risk.

2396. And you mean a risk of disease if a portion of the carcase is taken into the stomach?—Yes. There may have been an escape all through the animal's body, and if you had it let alone it might have been as bad as those two in a few days, and there may be no outward indication to demonstrate that that was so.

2397. Do you regard it, in your opinion, as an ascertained scientific fact that infection may be taken in by ingestion by man?—Yes.

2398. Do you know in point of fact that scientific opinion upon this question has been maturing within the last few years?—Certainly.

Professor THOMAS WALLEY, *sworn*, examined by
Mr. Comrie Thomson.

Prof. T.
Walley.

2399. You are a member of the Royal College of Veterinary Surgeons, and Principal of the Royal Veterinary College, Edinburgh?—Yes.

2400. For the last eighteen years you have been a teacher of veterinary science in Edinburgh?—Yes.

2401. You are inspector for the Local Authority under the Contagious Diseases (Animals) Act, and also for the Privy Council?—Yes.

2402. You have written a treatise on what is known as the four bovine scourges, of which tuberculosis is one?—Yes.

2403. It was published in 1879?—Yes.

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1889. 2404. You have a considerable consulting practice throughout the country?—I have.

Prof. T.
Walley. 2405. Have you for many years taken a special interest in tuberculosis in animals?—Yes, for a tolerable number of years now.

2406. And you have prepared and read more than one paper on the subject?—Yes.

2407. One before the West of Scotland Veterinary Medical Association in 1872, one before the Sanitary Association of Glasgow in 1888, which is reported in the *Sanitary Journal* of September, 1888, and one before the Medico-Chirurgical Society in 1888?—Yes.

2408. And you took part in the discussion at the British Medical Association last year?—Yes, I opened the discussion.

2409. I believe that a distressing circumstance in your own family in 1871 led you to take an interest in this matter, when a little boy of yours died of tuberculosis?—Yes.

2410. And you believed it to be from taking the milk of a tuberculous cow?—Yes.

2411. Assuming it to be a fact that milk conveys the disease to man, what do you deduce from that with regard to meat?—I do not deduce anything from that in reference to meat, but I do deduce this, that the bacillus, or the organism of the disease, may be and very likely is circulating in the system, and as such may find its way through the blood and lymphatic vessels into the flesh.

2412. But if it be the case that milk conveys the disease to man, can you see any reason why meat should not also do so?—Certainly not; that is to say, if the bacillus and its spores are in the meat.

2413. If it communicates at all, there is no reason why it won't communicate it as well?—Most certainly not.

2414. Do you think ordinary cooking would afford a sufficient guarantee against risk of that kind?—I do not think so.

2415. Would ordinary cooking destroy all the organisms that were to be found?—It would destroy all the organisms in the parts of the meat that were sufficiently cooked, but not in the other parts.

2416. In the ordinary roast there are portions which are not fully cooked?—Yes.

2417. Is tuberculosis a disease which is limited to one part of the system or is it systemic?—Sometimes it is limited to one part of the system, and at other times it is certainly systemic.

2418. In the latter case it is penetrating through the whole animal?—More or less.

2419. Are you aware that it has been established that bacilli are sometimes found in the marrow at an early stage of the disease?—I am aware of that through scientific teaching, and I have frequently seen it in the bones, and have depicted two examples in the "Four Bovine Scourges."

2420. And does that fact confirm the view that sometimes, at

all events, it pervades the whole system?—That it is certainly in the blood stream. May 29,
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2421. And therefore being conveyed to every part of the system?—Yes. Prof. T.
Walley.

2422. So that virus may impregnate parts of the system in which tubercles have not appeared?—Certainly.

2423. But where, if you give them time to develop, they will appear?—Yes.

2424. Is the presence of the tubercle an invariable symptom that the bacilli are in the system?—I take it as such.

2425. Tuberculosis corresponds to phthisis in man?—Yes, there is no doubt about that.

2426. On 9th May, did you go to Moore Street slaughter-house and examine the two carcasses in question?—I did.

2427. Did you examine both of them carefully?—Yes.

2428. And I believe you prepared a report of your examination and handed it to the prosecutor?—Yes.

2429. [Report now produced.] Is that your report, and is it true and correct?—Yes.

2430. In your opinion these carcasses ought to be destroyed?—Most certainly.

2431. Did you take some portions of the carcase of the bullock away with you to hand to Professor M'Fadyean for microscopic examination?—I did.

2432. Would you have arrived at these conclusions apart from the view that the slightest amount of tuberculosis would be sufficient to condemn the whole animal?—I should have condemned the cow quite independently of tuberculosis or any other disease from the condition of her carcase.

2433. She was unfit for food apart from the tuberculosis?—Yes.

2434. What about the bullock?—The carcase of the bullock was not so bad by any means. It was a little dark and a little soft, and I should not have condemned it except in connection with tuberculosis or some other disease. I should have sought for some disease before I condemned it.

2435. But the reason you condemned it was that it was suffering from tuberculosis?—I found the flesh altered in its character, showing that there was some disease present, and I found that it was suffering from tuberculosis. The flesh was darker and softer than it should have been in an animal of that character.

2436. You are aware that hitherto it has been the custom only to remove the parts visibly affected by tuberculosis, and now the proposal is to destroy the whole carcase. I want to know whether your condemnation of this bullock was proceeding on the first theory or on the second,—whether you thought that the whole animal was visibly altered in character in such a way as to warrant the condemnation of it all, or whether you proceeded on the stricter theory that there was tuberculosis in one part and assumed that there was great risk attending it?—I should not have condemned the carcase if I had not seen disease; but when I found the animal affected with disease of such a character as

May 29, 1889. tuberculosis, I considered that it was not fit for human food, or that it would be dangerous as human food.

Prof. T. Walley. 2437. That there was material risk attending the use of it? —Yes.

2438. Have you perused the report of the Paris Congress last summer?—Yes.

2439. And do you concur in and adopt the resolutions that were arrived at on this question?—I think the resolutions are just what anybody who knows anything about the disease must concur in.

2440. And you consider these resolutions and opinions as the most recent expressions of medical and veterinary opinion on this subject?—I do.

2441. You have also perused the report of the Privy Council Committee which came out in the beginning of last July?—Yes.

2442. And you generally endorse their opinions with regard to tuberculosis?—Yes; these were the views I arrived at a long time ago.

2443. I refer you to paragraph 61 and to the first branch of paragraph 65; do you agree with these statements?—I don't quite agree with that first paragraph about the disease in fowls being only known to veterinary surgeons in large cities. Those of us who are in large cities, such as, for example, myself, generally have sent to us the diseased parts of animals for the purpose of giving an opinion, and consequently where I would see a hundred specimens, a veterinary surgeon in the country might not see half-a-dozen; but it was known to me before I came to Scotland at all.

2444. That is a mere historical fact?—Yes.

2445. But you concur in the opinions expressed in that?—Yes, to a certain extent in the first one, and I quite concur in the last one.

2446. I refer you to paragraphs 21, 24, and 25; do you agree with these?—Yes, quite.

2447. Do you concur in paragraphs 43 to 46?—Quite.

2448. You have also seen, and I ask you to produce, a volume entitled *Journal of Pathology and Therapeutics*, containing a translation of the decree issued in France?—Yes.

2449. Do you consider that was sensible legislation?—Yes, to a very great extent, and with our present knowledge.

2450. Under the second paragraph of the third article would the carcase of the bullock in this case be allowed to go into consumption?—No; certainly not.

2451. Would that include the bullock?—Most positively, in the condition in which it was, on account of the irruption in the walls of the chest.

2452. And it was the best of the two?—Yes. The irruption in the bullock was of such a character that I would not have passed it, although I might have passed it in other circumstances. It was suffering from an acute infective inflammation of the pleura, which, in my opinion, was tuberculosis.

2453. Are you aware that the Parliament of Victoria appointed

a Board to investigate the subject of tuberculosis in cattle?— May 29, 1889.

Yes.

2454. And you have the report which that commission issued?— Prof. T. Walley.

Yes.

2455. I show you a cutting from the *Veterinarian*:—"The Victorian Commission, convinced of the contagious character of tuberculosis, as a local conclusion, recommend its being included in the category of contagious diseases, insist on the inspection of all meat supplies and dairies, and would decree that all infected subjects in field and farm, found in market, fair, or abattoir, and all infected carcasses exposed for sale should be seized and destroyed." The proposal there is that it should be dealt with as you deal with pleuro-pneumonia under the Contagious Diseases (Animals) Act?—Yes.

2456. Of course, that would involve compensation?—Yes.

2457. There was a meeting held as far back as 1884 at the Victoria University, Manchester, and there you say that the propositions you have to bring forward are that the flesh of animals that have suffered from glanders, tuberculosis, etc., should be condemned, and the questions were all answered by the meeting in the affirmative?—Yes.

2458. So that even in the third year after the bacillus of tuberculosis was known to you, that was the opinion of the National Veterinary Association?—Yes.

2459. Has professional opinion been growing in the same direction ever since?—It has, very strongly.

2460. And there has been from 1881 or 1882 downwards to the present hour a progressive private research and public discussion as to what is best to be done in this matter?—Yes.

2461. Of which we have the latest public expressions in the Paris Congress, and the Privy Council Committee?—Yes.

Cross-examined by *Mr. McKechnie*.

2462. Are you consulted by the Edinburgh Corporation about this matter?—I am not exactly consulted by the Edinburgh Corporation. I am consulted by their officers certainly.

2463. Is it the case that in Edinburgh, where they condemn an animal for tuberculosis, the Corporation gives compensation?—It is not the case. I want to know if these are dead carcasses or living animals to which you refer.

2464. Is it the case that when a carcass is condemned in Edinburgh for tuberculosis, the magistrates of Edinburgh give compensation?—Certainly not, unless I seize the animals for pleuro-pneumonia.

2465. Now, I am not speaking without very definite information—is it not the case that compensation is given for animals condemned for tuberculosis, and that the amount of compensation in every case is fixed and determined by you?—Certainly not.

2466. Is there any truth whatever in that suggestion?—No truth whatever, but allow me to explain. This question has been put to me before in the witness-box in a similar manner, it is entirely wrong, and it is based on entirely wrong premises. I

May 29, 1889. seize no animal unless it is, in my opinion, suffering from pleuro-pneumonia.

Prof. T. Walley. 2467. My question had reference to whether, when animals are condemned because they suffered in life from tuberculosis, the amount of compensation is fixed by you?—No compensation is given unless I have seized the animal during life as, in my opinion, suffering from pleuro-pneumonia.

2468. *Sheriff Berry*.—In no case is compensation given where the cause is tuberculosis?—No.

2469. *Mr. McKechie*.—I am not speaking without information—do you say that you have never given, or recommended, or advised, or suggested in any way, that the magistrates of Edinburgh should give compensation for the carcase of one animal?—Not unless I have seized the animal during life. On one occasion I took an animal which I was not sure of, whether it was tuberculosis or pleuro-pneumonia, and gave the man £5, but on all other occasions when I have taken animals it has been on the supposition that they were suffering from pleuro-pneumonia.

2470. And it turned out to be always tuberculosis?—On several occasions it has turned out to be tuberculosis. The value of the animal must be given. I don't want to be misunderstood. The Contagious Diseases (Animals) Act gives power to seize an animal that you believe to have pleuro-pneumonia, but if it does not turn out to be pleuro-pneumonia you must give compensation, and that compensation is the value of the animal before slaughter, it having been seized for that.

2471. Have you anything to do with the Corporation of Edinburgh except seizing animals alive—you are not their inspector in the slaughter-house?—No.

2472. Do you know that they have given compensation for animals condemned for tuberculosis and not seized alive?—No, not in any case that I have had to do with.

2473. You have never awarded any compensation?—Most positively not. I should not dream of doing so.

2474. The cow in this case came from Denmark, and was landed at Leith. Was it your duty to inspect such animals and see whether they should be landed in this country or not?—Yes.

2475. All such animals?—Yes.

2476. And if an animal was not fit for human food you would not allow it?—Excuse me if I say you don't understand the matter at all. You will understand that I am the inspector for the Privy Council, but I have nothing to do with any disease unless it is under the Contagious Diseases (Animals) Act, which tuberculosis is not.

2477. But this cow must have passed through your hands?—Quite probably.

2478. And you tell us that the cow was so bad that, apart from all disease, you would have condemned the carcase?—Yes.

2479. And yet you allowed the living skeleton in its framework to go past?—I said nothing about a living skeleton.

2480. You allowed the animal to pass you in such a state?—I

allowed it to pass because it had no pleuro-pneumonia. I had no power to interfere. May 29, 1889.

2481. Has cooking any effect upon this disease?—Yes, it must render all deleterious matter harmless. Prof. T. Walley.

2482. Cooking and the human stomach applied to a bacillus would very soon do for him?—No.

2483. Not cooking at 212° ?—If it is properly cooked.

2484. Have you ever seen a bacillus in a piece of cooked meat?—I cannot say that I have.

2485. Or anybody else?—I cannot say anything about what anybody else has seen.

2486. *Mr. Comrie Thomson.*—There is no authority for a public body to give compensation in respect of animals slaughtered for tuberculosis?—None whatever.

2487. That is a question that may come to be considered some day?—Yes.

Adjourned till to-morrow at 10.30 a.m.

Thursday, 30th May, 1889.

EVIDENCE FOR PROSECUTION—*continued.*

Dr. J.
Wallace.

Dr. JAMES WALLACE, *sworn*, examined by *Mr. Comrie Thomson*.

2488. What are your professional qualifications?—I am a doctor of medicine, a Fellow of the Faculty of Physicians and Surgeons of Glasgow, medical officer of health for the burgh of Greenock, and I hold several other appointments.

2489. How long have you been medical officer of health for Greenock?—About 14 years.

2490. On Friday, the 17th of this month, did you, along with Mr. Fyfe, the sanitary inspector, examine the carcasses of the bullock and cow in question?—Yes.

2491. I believe by that time both carcasses had been somewhat handled?—A good deal handled.

2492. By that time both the viscera of the chest and abdomen had been removed?—They had.

2493. What appearances were presented by the inner lining of the chest wall of the cow?—There was the appearance of recent inflammatory exudation.

2494. In what remained of that lung did you find tubercular matter?—Yes, there was a great deal of tubercular matter.

2495. What condition was it in with tubercular matter?—A state of softening. The lung was riddled, so to speak.

2496. Did you examine the lung of the bullock?—I did.

2497. What did you find in it?—The lung of the bullock had been handled a good deal and was considerably cut up, but I succeeded in obtaining a tubercular mass about the size of a small horse-bean, and on cutting into it I found that it was in a state of caseation—cheesy.

2498. It was a tubercular nodule?—Yes, it was distinctly so.

2499. Did you find another nodule?—I did.

2500. Was that about the same size?—Nearly the same size, surrounding a vein.

2501. In what condition was it?—There was recent inflammatory exudation round that part.

2502. From these appearances what conclusion did you arrive at as to what disease the animals were suffering from?—They were suffering from a disease called tuberculosis.

2503. To what is that disease due?—It is due to the presence of a microbe called a bacillus.

2504. What is the habit of that microbe when it once gets introduced into the system?—It is to wander from part to part of the system till it finds a proper nidus.

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Wallace.

2505. Does it multiply?—Exceedingly.

2506. It multiplies by fission of itself, and also by spores?—Yes.

2507. Does it also produce what I think are called ptomaines or alkaloids?—It does produce animal alkaloids.

2508. And do these also circulate the mischief?—They do.

2509. Is it through the lymphatic and general vascular system that the poison is distributed?—It is.

2510. Tubercles form in almost any texture of the body?—Yes.

2511. Being in process of formation before giving an outward sign?—Yes.

2512. During that process of formation do you consider the portion is dangerous for food?—I do.

2513. In your opinion, is the disease of tuberculosis communicable from animals to man?—It is.

2514. Is that the case even although to the naked eye the tubercles may be found to exist only to a limited extent or even in a single organ?—It is.

2515. And therefore is it your opinion that when an animal is even to a limited extent affected with tuberculosis, the whole animal is unfit for food and should be condemned?—That is my opinion.

2516. Do you think that it would secure the public safety merely to remove the manifestly diseased portions of the viscera and adjacent glands?—No.

2517. Are the glands in the body chiefly found in groups and chains?—Yes, clusters and chains.

2518. Does that present a practical difficulty?—Yes.

2519. Tell us what it is.—I would perhaps explain that by a surgical illustration. There is a particular disease in the female called cancer of the breast. When the disease developes, the glands in the armpit become affected, and the surgeon in operating upon that endeavours to remove the glands which he feels or perceives to be affected in the armpit. By-and-bye, however, in many cases swelling takes place above the collar-bone, and goes up the neck, and the whole chain of glands becomes affected, showing that it is exceedingly difficult for a man at times to operate and to know where the disease begins and where it ends.

2520. So that in this matter it would be difficult to determine where the disease began and where it ended?—Yes. The glands are exceedingly numerous in the body; some are small and some are larger than others.

2521. We have been told that cooking, by the process of either roasting or boiling, would destroy or render these animals innocuous—what is your view with regard to that?—As cooking is usually carried out in this country, I am afraid that most of the meat that is presented to us in the shape of roasts and so forth would not be in a safe state for a human being.

2522. A different mode of cooking would require to be adopted from that which is agreeable to the public taste just now?—Yes, and we would require a teacher in almost every home.

2523. We have been told, and I have no doubt there is truth

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 Dr. J. Wallace. in it, that the boiling of beef or mutton might have a more probable effect in destroying the poison than the roasting process?—If the boiling was thorough that is quite a possible thing.

2524. And continued for a considerable time?—Yes.

2525. But that might prevent the joint being so agreeable to the taste—well, practically I take it that your view is that boiling and roasting are by no means a sufficient preventive of mischief?—That is my opinion.

2526. Although it remains true that exposure to heat at a certain temperature may destroy the bacillus?—That is so.

2527. Are you aware that it is held by many scientific men—and you share the opinion—that the spore of the bacillus may require more intense heat to destroy its noxious qualities than the bacillus itself?—Yes.

2528. *Sheriff Berry*.—Do you mean that to destroy its existence, its life, it requires a much greater amount of heat than the bacillus?—I have no personal experimental knowledge of that. I believe that the general opinion of bacteriologists is that the spores require greater heat to destroy them than the bacilli themselves, but I cannot say to what extent.

2529. *Mr. Comrie Thomson*.—This subject has been maturing during the last eight or nine years?—Yes.

2530. May I take it that prior to that period, and before Koch's discovery of the bacillus tuberculosis, there had been a general opinion that specific diseases were produced by specific organisms?—Yes.

2531. And that for many years during the most of this century the idea of spontaneous generation of disease had lost its hold?—Yes.

2532. And although it was only in 1881 that the specific bacillus of tuberculosis was discovered, yet the fact that the disease was produced by a living organism of some kind had been accepted by the profession?—Yes.

2533. Do you think there is any ground for the view that the bacillus tuberculosis is a mere concomitant of what I may call the physico-chemical change of the substance of the body?—No; I think it must be introduced.

2534. Suppose we were told that the alkaloid causes the mischief, does that involve that there must have been something to produce the alkaloid?—Yes, of course.

2535. The alkaloid is the house of the bacillus?—Yes.

2536. And he has to build his house?—Yes.

2537. That is the first step?—Yes.

2538. You are familiar with the word sepsin?—Yes.

2539. Tell us what it is.—It is an alkaloid poison of a very virulent character, and is believed to be generated by bacteria in the human system.

2540. So that even all those gentlemen who may maintain that sepsin is the cause of tuberculosis have to find a cause for the sepsin?—Yes.

2541. That is a bacterium of some kind?—Yes. A bacterium is the manufacturer of the sepsin.

2542. And in your judgment the poison producing tuberculosis, assuming that there is a second cause, is the bacillus of tuberculosis?—Yes, precisely.

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Wallace.

2543. Have you acted upon these views in Greenock in your official capacity for some time back?—Yes.

2544. For how long?—For upwards of five years.

2545. And in Greenock the officers of the Local Authority under your direction have been in the habit of seizing and destroying all carcases in any way affected with tuberculosis?—Yes, they have.

2546. Although the visible affection is localised?—Yes.

2547. I need scarcely ask you whether you have done so in the conscientious belief that in that way only you can secure the public safety?—Yes.

Cross-examined by *Mr. Jameson*.

2548. You used the illustration of cancer; is it caused by a microbe?—Some authorities are of opinion that there is a microbe at the bottom of the cancer, but that is a question under discussion by the profession generally.

2549. If not caused by a microbe, how is it caused?—It may be caused by irritation or the result of heredity or a variety of causes.

2550. There is one thing we are certain of, that it is a degenerated and morbid condition of the animal tissue?—Yes.

2551. Is not that description exactly applicable to tuberculosis? are not tubercles just a degenerated and morbid condition of the flesh or tissue?—No; tubercles are deposited in the tissue.

2552. You don't mean that the bacillus deposits the tubercle?—It manufactures it.

2553. Is it not according to the theory that there is a bacillus, or is it the tubercle that forms round the bacillus?—It forms the tubercle; it gives rise to the irritation.

2554. But what forms the tubercle is the vital process stirred into action by the bacillus?—Yes.

2555. That is a different thing from the bacillus manufacturing the tubercle, is it not—it causes it, but it does not make it?—It is within it, and it gives rise to irritation in the tissues, and there is organic matter effused which forms the tubercle.

2556. Now, before this theory of the bacillus tuberculosis came out, what was it supposed that phthisis—that is, tubercular consumption—was due to?—It was supposed to be due to some poison circulating in the system. There were experiments before Koch which led the profession to believe that there was some poison, but what that was the profession had not come to a definite opinion upon. After the experiments of Villemin, however, in 1865 it was pretty certain that there must be something that gave rise to this formation in different parts of the body.

2557. Consumption has been well known to be hereditary?—It is frequently hereditary.

2558. And it frequently skips over one generation and reappears in a second?—Yes.

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Wallace.

2559. Do you suggest that the bacillus which exists in the grandfather skips over the son and reappears in the grandson?—
I do not suggest anything at all.

2560. How do you explain the atavism which occurs in consumption by the bacillic theory?—I do not attempt to explain it.

2561. Are there other bacilli in the human system besides the bacillus tuberculosis?—Yes, there are some.

2562. What are they called?—There are the micro-coccus and others, but I do not profess to be a bacteriologist.

2563. But you know sufficiently as a medical man studying the current medical literature that there are a number of small organisms constantly present in the human body?—Yes. We have got bacteria in pyæmia or blood poisoning, and we believe it to be due to the bacteria, and it gives rise to this disease just in the same way as the bacillus in the case we are considering just now gives rise to tuberculosis.

2564. Is not the air supposed to be full of the germs of all sorts of bacteria?—That is supposed.

2565. And the great surgical reformation that has been carried out of late years by the antiseptic treatment is founded upon this, that when you have a wound it is necessary to dress it with carbolic acid or something which will kill the germs, and prevent them doing harm to the wound?—That is the antiseptic theory.

2566. We don't go about with carbolic bandages round us, but I suppose that the bacilli are constantly present, in some shape or another?—No; I don't admit that.

2567. Are they not in any healthy person—is not bacteria in the blood?—I won't admit that, and I don't think it follows that, although you have microbes floating in the atmosphere, every person who is exposed to these is septic. There are people who have receptivity, and others who have not.

2568. In the normal condition of the human body, are there not bacteria in the flesh and blood at all?—No; I am not aware.

2569. But they are distributed universally, and the spores are distributed that whenever they get a proper nidus, such as a wound that is not healing properly, or some degenerated part of tissue, they settle down?—Yes.

2570. And it is believed that ordinary putrefaction is carried on by microbes?—Yes.

2571. In place of the old physical theory of animal causes, which was oxidisation?—Yes.

2572. There is a great variety of bacilli?—Yes.

2573. There is the ordinary bacillus of putrefaction, and you have got the bacillus tuberculosis?—Yes.

2574. Is it the case that bacilli change their form and character very much, according to their habitat for the time being?—I am not aware of that.

2575. Are you not aware that these bacilli of tuberculosis change morphologically between man and other animals?—They are believed by bacteriologists to be identical.

2576. But is there a morphological change?—There may be; I am not able to give an opinion upon that.

2577. Is it not quite possible, knowing what we do of microbes and the way they pervade the atmosphere, and so on, that this bacillus may be the concomitant of a degenerated condition of tissue, and not the cause of it?—I will not say that; I could not admit that. If a bacillus was in a degenerated tissue, it would multiply to infinity and increase.

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Wallace.

2578. Is it not possible that the person who takes consumption is attacked by consumption owing to a hereditary taint?—Yes.

2579. And that this bacillus, finding in his lung the spores of it taken by inhalation, finds there a suitable nidus, and settles down on the weakened and degenerated tissue?—It is possible; it must be weakened in some way or other.

2580. May it not, therefore, be as I have put it already to you, that the disease of consumption precedes the bacillus there, and not the bacillus the disease?—No.

2581. Why not?—We have nothing from heredity except a general weakness of the system.

2582. I thought you said that consumption was known to be hereditary?—Yes; that means that the party is more predisposed and the tissue is more predisposed to it than with a person in good health and of good constitution.

2583. But I assumed you had told us that consumption appears sometimes in a child and sometimes in a grandchild of a consumptive parent, and that there the disease appears. Now, assume that this disease has appeared, is it not the natural order of events that these spores and this bacillus coming through the atmosphere should find their way into the system and settle down in it and begin the mischief?—I cannot admit that.

2584. Just as the bacillus gets into an open wound?—I cannot admit that.

2585. You say the bacillus of pyæmia will only pick a wound where there is degeneration of tissue?—A healthy wound may become unhealthy.

2586. Is it not the unhealthy wound that the bacillus settles down upon?—It may settle down on any healthy wound.

2587. Long before carbolic acid was found out there were plenty of healthy wounds which resisted the influence of the bacillus of pyæmia?—Yes, and others did not resist.

2588. But the ones that did not resist were wounds on which there was unhealthy tissue to begin with?—No, not necessarily unhealthy tissue.

2589. What was the cause why it went to one and not to the other?—There may have been something in the constitution of the patient or a defect in the dressing; there may be a variety of causes.

2590. Is not the natural and probable theory to account for it this, that in the one case, where the pyæmia did not supervene, the wound was a healthy one, and therefore not attacked by the spores of the bacilli, and in the other that it was antecedently an unhealthy one?—The bacteria caused the wound to be unhealthy.

2591. They may aggravate the mischief, I must admit,

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 Dr. J. Wallace. but is not the reason why they find a proper nidus in the one wound and not in the other that the one wound is healthy and the other unhealthy?—If the one is unhealthy the bacteria would have a better nidus, but a healthy wound may become an unhealthy one from the presence of bacteria.

2592. Is it not possible for a wound to become unhealthy, and refuse to heal, even although bacteria are excluded from it altogether?—It is quite possible, from something in the system otherwise.

2593. Is it not possible that, even if you could exclude the bacillus of tuberculosis from a consumptive patient, that patient would pine away and die without the bacillus at all?—If the patient is under consumption, I take it for granted that the bacillus must be there.

2594. Have you any proof of that, that the bacillus is antecedently present in the body before consumption develops, instead of coming after the hereditary taint has developed consumption?—That is the general belief of the profession in the present day.

2595. But you cannot say that it has been proved?—Not satisfactorily.

2596. You are not prepared to say what heat would be sufficient to kill the bacillus tuberculosis?—Boiling heat, 212° .

2597. Would not a great deal less be sufficient?—It is the general opinion that 212° is sufficient.

2598. But albumen coagulates at 160° ?—Yes.

2599. Would not that finish the bacillus?—I am not sure of that—I don't think it.

2600. You are not prepared to say that anything under 212° would?—No.

2601. But 212° would?—Yes, if exposed to it sufficiently long.

2602. Would a second of it do?—I would not be positive as to that.

2603. How long would you require to prolong it?—A good boiling for an hour or so.

2604. It takes three minutes to boil a hen's egg; and how long does it take to boil the egg of a bacillus?—I am not aware of any special experiment with reference to that, but it is generally believed by experimentalists that 212° does it.

2605. But if you boil a hen's egg in that time, how long would it take to boil the egg or spore of a microbe?—A single spore of a single bacillus is very seldom got. We are not able to handle it. You can heat the slide of a microscope with a spirit lamp, but as to the exact temperature it is impossible for me or any other person to say.

2606. So that you think there is no certain rule of safety for the spore of a bacillus?—No.

2607. There may be hundreds of these spores prior to the appearance of tuberculosis according to your theory, because they don't appear till the tubercle is formed, and no microscopic investigation would be able to detect spores of bacilli in an animal?—It is very difficult to detect the spores.

2608. And there would be nothing to suggest the presence of

the spores to the naked eye, although the animal might be full of them?—No. May 30,
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2609. What is that alkaloid, sepsin?—It is caused by the bacillus of pus. Dr. J.
Wallace.

2610. Is that bacillus always found in pus?—As a general rule.

2611. Is it a bacillus?—It is a bacterium.

2612. Is this pus bacillus as well defined as the bacillus of tuberculosis—do you know him as well?—I believe it is, but I am not a bacteriologist.

2613. But you are here to give information, and we will try to get all we can from you. This bacillus appears in pus generally?—Yes.

2614. Is not pus caused by the tissues of the body being irritated by some foreign matter, such as a thorn in the finger?—Yes.

2615. It is the thorn that produces it?—It is the irritation of the tissues.

2616. But when the pus is formed, this bacillus finds a home in it, and goes and breeds in it?—Yes.

2617. Then it is not the bacillus that causes the pus, but the thorn has caused the pus?—The bacillus finds a nidus there.

2618. Is not that the way that the bacillus does in tuberculosis—he finds a degenerated condition of the lung, and he comes and finds his nidus there?—The bacillus of tuberculosis enters the system by some weak point; it may enter by the lung or from the intestines or the stomach, and it will only enter where there is a weak point.

2619. And only breed and propagate where he finds a nidus?—Yes.

2620. Did you take up this view about destroying the carcasses of animals, however slightly affected by tuberculosis, from your own experiments?—No, but from what I read.

2621. Had you any consultations with the gentleman who was here yesterday, Mr. Robinson?—I have had frequent consultations with him.

2622. Was it he who first suggested to you the propriety of destroying these carcasses?—No, he was not the first.

2623. Who was?—I considered that it was my duty to protect the general public health.

2624. Have you ever in your practice come across a case of tuberculosis being induced in the human subject by eating the flesh of an animal that had been tubercular?—I have had no experience of that.

2625. In all your experience you have not come across a case of that kind?—I have not come across a case of that kind.

2626. Have you come across a case of tuberculosis in the alimentary canal?—We have what is called *tabes mesenterica*.

2627. But that is not in the alimentary canal, but in one of the lymphatic glands?—In the glands themselves.

2628. What was the cause?—From the presence of bacilli.

2629. But you cannot say what it was from?—In children it may have arisen from milk.

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—
Dr. J.
Wallace.
2630. Tuberculosed milk?—Yes.
2631. Milk is always taken in a raw state?—Some children get it boiled.
2632. But you know very well that that is the most unusual way of taking it?—
2633. *Mr. Comrie Thomson.*—I don't know about that. My own doctor will not allow a single drop of milk to be taken without being boiled.
2634. *Mr. Jameson.*—But the great bulk of children who take milk take it raw.
2635. *Mr. Comrie Thomson.*—I will admit that; you need not trouble proving that.
2636. *Mr. Jameson.*—The fact of meat being cooked must expose any bacilli or germs that are in the meat to considerable danger?—Yes.
2637. And if the meat is thoroughly cooked and brought up to 212 degrees, it will kill them?—Yes, but what about the spores?
2638. I asked you about that; I thought we had left that point; you could not tell me what would kill them?—They require a higher temperature than the bacilli.
2639. They are apparently like the gods—immortal; how is it that the spores are more difficult to kill than the living bacillus—is not the life in the bacillus stronger than in the spores?—I suppose it is from the nature of the substance.
2640. Do you know what the nature of the substance is?—We know that the bacillus is a particular form and supposed to be a vegetable.
2641. But why should a spore be more hardy and less susceptible to destruction than a full-grown bacillus?—I suppose that is the nature of it.
2642. But what is in its nature to cause that?—I cannot tell you.
2643. And therefore it is pure hypothesis or supposition?—Hypothesis as to what?
2644. Hypothesis as to the greater hardihood of the spore than of the animal?—I am giving you the opinion of bacteriologists in general.
2645. But you can give no reason?—I have had no personal experience.
2646. This is the same bacillus as causes glandular swellings according to the bacillic theory?—It does.
2647. In scrofulous children?—Yes.
2648. They frequently recover entirely from these swellings?—Sometimes they do.
2649. How do you explain that upon the bacillic theory of tuberculosis?—By attention to the general hygiene, proper feeding, and so forth, you may bring a child out. I explain it in this way, that the cells in which the bacillus gets a nidus are put into such a condition as to kill the microbes.
2650. By good feeding?—Yes, and good air.
2651. And that is the same with phthisis?—Some cases of phthisis do recover.

2652. And the same with *tabes mesenterica*?—I would not say the same with regard to that. May 30,
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2653. I suppose cattle, if they were allowed to live long enough, could be cured of tuberculosis in the same way?—So far as I have read, I believe that the disease is much more rapid in its progress in cattle than in the human subject. Dr. J.
Wallace.

2654. But you have no personal knowledge of that?—No personal knowledge.

2655. And you can say, from the analogy of the frame of animals to that of the human subject, that tuberculosis may be local in cattle just as it is in the scrofulous glands of a tuberculous child?—The manifestation of it may be local, but we are not to know but what the bacilli may be circulating in some other part of the system, although they may not be able to find a sufficient nidus.

2656. Have you found bacilli in blood?—I have never experimented on that.

2657. *Sheriff Berry*.—You have not experimented at all; have you found bacilli anywhere by personal experimentation?—No; I have not.

2658. *Mr. Jameson*.—And what you have given us is the result of your reading as confirmed by your general medical knowledge, but you never saw a bacillus nor yet the spore of a bacillus?—Yes; I have seen them in microscopic slides.

2659. Have you seen the spores?—I have seen what appeared to be the spores.

Re-examined by *Mr. Comrie Thomson*.

2660. On the bacillus, I suppose?—Yes.

2661. My friend has asked you more than once, very naturally as a lawyer, whether certain things have been proved. Is it practically impossible to prove to demonstration that a man's death has been caused by the eating of tuberculosed meat?—Yes; we cannot make experiments on the human being.

2662. In order to do that you would require to exclude every other source of nourishment, and feed him with tuberculosed meat, and then kill him?—Yes.

2663. And we have not arrived at that pitch of civilisation in this country which permits of our slaughtering our fellow-creatures to ascertain a fact?—No; but it has been suggested that we should do that with criminals.

2664. We have not reached even that yet, so that it is incapable proof?—Yes.

2665. Are such matters always regulated by the highest scientific probability which is not equivalent to proof?—The highest scientific probability.

2666. And in such matters is that all we can proceed upon?—All that we can expect.

2667. Do you think that there is the highest scientific probability that the conclusion at which you have arrived as to the destruction of tuberculosed animals is sound?—Yes.

2668. My friend asked you whether under certain circum-

May 30, 1889. stances a bacillus did not undergo a morphological change. Assume that it does, would that affect its noxious qualities?—No.

Dr. J. 2669. That merely means a change of form?—Precisely.

Wallace. 2670. I may take it as a safe proposition, which will not be controverted, that no seed will grow without soil?—Precisely.

2671. And so a bacillus until it finds a soil is an innocuous creature?—Yes; that is my opinion.

2672. Some soils in the human body suit it better, and it flourishes and it works its wicked will, and there are some which reject it?—Yes. Some reject it more than others.

2673. As to this matter of heredity as producing consumption, is it the hereditary weakness of the tissue rendering a person peculiarly susceptible?—Peculiarly predisposed.

2674. The thing that is communicated from parent to child is this weakness?—This predisposition.

2675. Not the actual microbe which leads to the phthisis?—No.

2676. But the predisposition?—Yes.

2677. Has there also been a theory propounded to the effect that a microbe may be communicated from mother to child at birth?—Yes, that has also been put forward.

2678. But in either case before you can have consumption, the tuberculosis in the human being, you must have the presence of the specific organism either coming from the outside to the predisposed tissue, or transmitted in birth and remaining dormant till there is a weakness by cold?—Yes.

2679. Are these views orthodox?—Yes.

2680. My friend spoke about healthy wounds and unhealthy wounds. When you speak of healthy wounds is that a question of degree—a wound is always an abnormal condition of things?—Certainly.

2681. And a wound though popularly called a healthy wound and healing, and without poison in it, does present a soil more or less congenial for the noxious microbe?—Yes.

2682. Is it quite determined whether the bacillus belongs to the animal or the vegetable kingdom?—I believe it belongs to the vegetable kingdom.

2683. Therefore the analogy between my friend's egg—I mean the hen's egg—and the spore of the bacillus does not hold good?—No.

2684. One is an animal and the other is a vegetable?—Yes.

2685. The seed of a vegetable has more vitality than the vegetable which produces it?—Yes.

2686. *By Sheriff Berry.*—I understand you to say that in every case of a fester or a festered finger the bacillus is present, or is there first formation of pus and then the bacillus may find a lodgment there?—Yes; there is first the formation of pus.

Prof.
M'Fady-
yeen.

Professor JOHN M'FADYEAN, *sworn*, examined by *Mr. Ure*.

2687. You are a member of the Royal College of Veterinary Surgeons and a graduate in medicine and science of Edinburgh University?—Yes.

2688. Do you lecture at the Royal Veterinary College in Edinburgh?—Yes. May 30,
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2689. On what subject?—On anatomy and on pathology. Prof.

2690. How long have you been a lecturer there?—For four years on morbid anatomy. M'Fady-
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2691. I believe you are the editor of the *Journal of Comparative Pathology and Therapeutics*?—Yes.

2692. Have you had your attention specially directed to cattle pathology during the last thirteen years?—Yes.

2693. And have you paid special attention to the study of the pathology of tuberculosis?—Yes.

2694. I believe you were examined as a witness before the Commission appointed by the Privy Council last May?—I was.

2695. Can you tell me what tuberculosis is?—It is a specific disease, determined by the presence in the animal body of a micro-organism called the bacillus tuberculosis.

2696. In your opinion, is the bacillus tuberculosis the cause of the disease?—Yes, I think that is conclusively proved.

2697. You regard that as scientifically ascertained?—Yes.

2698. Without the bacillus tuberculosis do you think it possible to have the disease present?—No; I think it is not possible to have the disease without the bacillus.

2699. How does the bacillus show itself in the carcase?—It in a manner irritates the tissues, and in the process of time it leads to the development of a lesion—that is to say, an alteration in the normal structure. The precise structure of the lesion is not always absolutely the same.

2700. *Sheriff Berry*.—How do you define lesion?—We mean by that an alteration or deviation from the normal structure.

2701. *Mr. Ure*.—Do you regard the lesion as a characteristic visible sign of tuberculosis?—Not always absolutely characteristic to the naked eye.

2702. But with the microscope?—With microscopic examination in most cases it is almost conclusive.

2703. Have you conducted investigations with the view of discovering the germs of the disease in milk?—Yes.

2704. In conjunction with Dr. Woodhead of Edinburgh?—Yes.

2705. What was the result of these investigations?—We found in the dairies that we examined a certain number of animals suffering from tuberculosis of the mammary gland—that is to say, we were able to detect the presence of bacilli in the milk, and that was the whole object of our investigation.

2706. Do you consider that consumption of the milk would be dangerous to human health?—Very decidedly dangerous, I think.

2707. Do you hold the same opinion with regard to the consumption of tuberculous meat?—The consumption of meat actually tuberculous would be decidedly dangerous, if consumed raw.

2708. Suppose you have tubercles formed in certain portions of a carcase, do you think there would be a risk in eating other portions that were not visibly affected?—I think there would be a risk.

2709. Why?—Because, although tuberculosis may be, indeed,

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always strictly local to commence with, there is the tendency, or there is the danger at any rate, of it becoming general if the bacilli burst into the blood stream, and we can never declare with absolute certainty that in any particular carcase that has not occurred, because if the bacilli have gained access to the blood stream and have settled in different organs it takes some time—a week or ten days probably—to determine the formation of the tubercles.

2710. The bacilli must be present before the tubercle is formed ?
—Yes.

2711. Do the bacilli settle in what we may call a congenial soil as they pass through the blood stream and through the system ?—They probably become arrested in every part of the body, but they propagate themselves in particular localities which are, speaking figuratively, congenial soil.

2712. Would you translate the phrase “congenial soil” into more scientific language ?—As a matter of fact, it is not so much a matter of soil—that is to say, of the bacillus finding or not finding a suitable material to nourish it—as that wherever the bacillus becomes arrested there is in the healthy body a struggle between it and the animal cells of the part. In particular cases the struggle seems more favourable to the cells ; in others, the bacillus propagates itself, and leads to the development of the tubercular lesion.

2713. In what cases does the bacillus find the best opportunity for its ravages ?—In all cases where the constitution of the man or animal is weakened from any cause, that is favourable to it.

2714. Is that a predisposition to the disease ?—Not exactly. In addition to that, there is an inherited predisposition, which we do not understand fully. We only observe the fact.

2715. But in all cases do you consider that the presence of the bacilli is necessary before you have the disease ?—Yes.

2716. Are you of opinion that the disease is communicable from the animal to man ?—Yes, I think we are compelled to believe that.

2717. As the result of what ?—As the result of experiments on animals.

2718. Did you have submitted to you by Professor Walley specimens taken from the ox in question in this case ?—Yes.

2719. On the 13th of May, I understand ?—Yes.

2720. What portions were submitted to you ?—A piece of diaphragm, of course with the lining membrane of the chest attached to it.

2721. You did not take any portion of the cow ?—No.

2722. Will you tell us what examination you made of the portion so submitted, and what the result of your examination was ?—I examined it in the first place carefully with the naked eye, and I recognised that it had the usual characteristics of a tubercular lesion of the pleura in a comparatively early stage. I examined a scraping taken from the surface of the diseased part. Immediately and subsequently I made a more thorough examination of the piece of tissue after it had been hardened in alcohol and otherwise prepared for microscopic examination.

My examination with the microscope was in order to discover the bacillus by staining, but in that I did not succeed. I afterwards directed my attention to the minute structure of the lesion, and that I found to be what is usual in tubercular growths.

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2723. Would you describe the appearance of the lesion?—Tubercular growths are made up like all other parts of the body, either normal or abnormal, of what are called cells, minute microscopic atoms, and these are of different shapes and sizes. In the tubercular lesions a very characteristic structure is the presence of what are called giant cells, and these I found in this particular piece of meat.

2724. Do you entertain any doubt that after you found these giant cells and the lesion you have spoken about, the carcase was tuberculous?—Giant cells are not absolutely conclusive; they are found in other situations than in tubercular organs; but taking that in conjunction with the naked-eye characteristics of this lesion, and its correspondence with similar lesions in which I have found the bacillus, I have no hesitation in pronouncing this specimen to be tuberculous.

2725. You know, I believe, a disease called lymphadenoma?—Yes, I know the term.

2726. Can you tell me whether this portion of the carcase showed indications of that disease?—No. The histological examination, or the minute structure, showed that it was not lymphadenoma.

2727. Have you heard of sepsin?—Yes.

2728. What is sepsin?—It is a chemical substance—a sort of alkaloid, or what is known as a ptomaine, generated in putrefying material by putrefactive organisms.

2729. Is it produced by bacilli or bacteria?—It is generated. The agent which determines its formation is the putrefactive organism.

2730. Will you give me some illustration of that?—I believe the bacterium termo, a small rod-like body, is the commonest bacterium found in putrefaction.

2731. Are there other bacteria?—Yes, the names of which escape me at the present moment.

2732. But it is a product of the action of bacteria?—Yes, it is universally regarded by bacteriologists as the result of the development of these organisms in vegetable or animal tissues.

2733. Would the presence of sepsin indicate to your mind the anterior presence of an organism?—Undoubtedly.

2734. Do you think that exposure to a high degree of temperature would kill bacilli?—Yes; heat will kill all known bacilli.

2735. What temperature do you think you might safely say would destroy bacilli?—It depends entirely upon the period of exposure. A comparatively low temperature will kill all known organisms, if kept up for some length of time.

2736. Do you assent to the notion that exposure to 107° for several weeks would kill bacilli?—I think it possible.

2737. With 212°, would that be certain?—That would be cer-

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tain if sustained for a very short time, on two or three successive days, at short intervals each day.

2738. Do you think that, if flesh were imperfectly cooked, that would be sufficient to destroy the bacilli?—I think that the common methods of cooking are not to be relied upon to sterilise meat or to kill any organisms that may be there.

2739. Does it, in your opinion, require a higher degree of temperature to kill these spores?—Yes; that is speaking of spores in general.

2740. Would you say the same of the spores of the bacillus tuberculosis?—Yes, reasoning by analogy; the spores have not been isolated. They cannot be experimented with as we can with some other organisms, but the general law is that spores are much more capable of resistance to heat than the bacilli.

2741. Do you look upon that as an ascertained fact?—Yes.

2742. I suppose you are familiar with the French decree, printed in the journal edited by you?—Yes.

2743. Do you agree with the propriety of that decree?—Yes, I do.

2744. Adverting to the third article of the decree, do you, in particular, assent to this, “that the flesh of tuberculous animals shall be excluded from consumption, if the lesions, although localised, have invaded the greater part of an organ, or are manifested on the walls of the chest or abdominal cavity”?—Yes; I believe that is necessary to obviate all risk to public health.

2745. Holding that view, what is your opinion with regard to the animal from which the specimen you examined was taken?—I think most decidedly that it ought not to have been allowed to pass as an article fit for human food.

2746. *Sheriff Berry*.—Are you of opinion that it would fall under the provisions of the French decree?—Yes, it would have fallen under the provisions of that decree.

2747. *Mr. Comrie Thomson*.—Are you familiar with the process known as stripping?—Yes, I am well acquainted with the fact that it is frequently practised. It is a simple tearing off of the pleura or lining membrane of the chest cavity.

2748. Have you any opinion with regard to the efficiency of that process for removing the evidence of tuberculosis?—I think it is quite efficient in most cases to remove the naked-eye evidence of the tubercular process. I don't think it is to be relied upon to take away all the tubercular growth or all the bacilli.

2749. Why?—Because the tubercular process starting in the pleural membrane tends to extend in depth as well as along the surface, but to tear off the pleura would be extremely likely to leave some of the new growth in the muscle or fat under the pleura.

2750. And it would not be visible to ocular inspection?—What is known as a tubercle bacillus is not visible except under the microscope.

2751. May you search even with the microscope in vain for the presence of the bacilli where they exist in a carcase?—Yes; you may make a very prolonged search and examine many

specimens and fail to find them, although other methods of experimentation may prove that they are there. May 30, 1889.

2752. Have you made actual experiments which show that bacilli are left after stripping takes place?—No, I have not made any such experiments. Prof. M'Fadyen.

Cross-examined by *Mr. Jameson*.

2753. You are an M.B. and C.M., and have studied the pathology of the human subject?—Yes.

2754. As well as that of cattle?—That is to say, I have been taught it.

2755. You are aware that it has been well recognised that consumption in the human subject is hereditary to some extent?—I believe the modern view is that consumption is very seldom inherited—that there is a tendency to consumption inherited, but that actual consumption is extremely rarely inherited.

2756. Is not that view a change upon the view which was universally held before?—I am not aware what the view universally held was. My own experience only extends about twelve or fourteen years, but I am aware that in that time a very careful search has been made to discover newly-born animals and children tubercular, and my belief is that they have not found one child tubercular at birth, and that inherited tuberculosis in the lower animals has only been established twice—the last time having been recorded about a month ago.

2757. By that you mean tuberculosis as evidenced by the presence of tubercles and bacilli?—Yes.

2758. But is it not perfectly well known that not only is consumption hereditary in the sense of passing from mother to child, but from grandparents to grandchild, leaving out a generation?—The tendency, but not the disease.

2759. The predisposition?—Yes, the diathesis.

2760. Does not that predisposition consist in this, that at a particular time of life the child or grandchild, as the case may be, develops a morbid condition of part of the tissue of the body in which this bacillus finds a nidus?—It does not mean that.

2761. What does it mean?—It means that there is inherited a weakness of body—a weakness which belongs to probably every animal cell in the body—which makes it fall an easier prey to the bacillus tuberculosis when it gains entrance to the animal.

2762. But the cell is in a degenerated condition before the bacillus attacks it, in your view?—No, not degenerated. It is a something that we only infer. We cannot discover any difference in the cells of such people.

2763. And it is matter of supposition whether the cell is merely weak or whether it has reached a stage that may be called degeneration of tissue?—I might put it this way—

2764. Is that so—is it matter of entire hypothesis whether the cell, which you have described quite properly as becoming a fit nidus for the bacillus, in the lungs of a person predisposed to consumption, is really weak, or whether it has reached a stage which may be called the degeneration of tissue?—I think it

May 30, 1889. would be an abuse of the term degeneration as used in pathological works to apply it to that case at all.

Prof. 2765. You think so?—Yes.

M'Fadyen. 2766. On what do you found that view—have the cells attacked by this bacillus ever been noticed before being attacked?—We are not justified in saying a cell is degenerated unless we can get evidence of it.

2767. And I suppose that it generally happens both in animals and man that you cannot see it till it has progressed to a considerable extent?—You can see it if an animal is inoculated experimentally; you can see decided evidence of it in from three weeks to a month.

2768. And then it has advanced a considerable stage?—That is the stage at which the naked-eye lesions are discovered.

2769. After inoculation?—After inoculation with materials containing the bacilli of tuberculosis.

2770. You have referred both in your examination and cross-examination to the cells of animal tissues. I think you said that they might overcome the bacilli—they have a sort of separate life?—Yes; they have a certain independent vitality to this extent that they are free from their neighbours and are endowed with a power of locomotion within narrow limits.

2771. Is it not possible that these cells may get into a degenerated condition without the presence of any bacilli of any kind whatever?—They frequently degenerate from other causes.

2772. Is it not quite as likely, for all you know, that these cells first degenerate before the bacillus tuberculosis takes up its abode in them as that the bacillus produces the first degeneration of the cells?—I think there is no evidence of that.

2773. Is there evidence either way?—Yes, very good evidence the other way.

2774. What sort of evidence—do you mean by inoculation?—Yes, with a certain number of organisms; when they are introduced into the body we can follow their progress in the tissues, and can see them actually inside the animal cells.

2775. But is it not possible that, when you inoculate an animal with tuberculous matter, you do not merely introduce the bacillus of tuberculosis, but also some depraved animal matter which may affect the animal which you are inoculating?—Yes; that is one of the original objections that held good till the system of growing pure cultures began—growing successive generations of the organism on an artificial medium.

2776. I can understand your eliminating the bacillus altogether from these, but in actual cases of living organisms is it not very likely that you may introduce depraved matter which may affect the cells of the animal?—Such depraved matters are unknown pathologically, so far as I am concerned.

2777. In your evidence before the Privy Council Committee, 5058, there is this passage:—"Does it (tuberculosis) appear in any particular forms of animals more than in others?—It is most common in bovine animals, and in poultry next in my experience; and I have seen two cases in the horse spon-

“taneously and one in a cat.” What were those cases to which you applied the word that you have seen it spontaneously?—I meant not inoculated or not induced experimentally. It is a somewhat loose use of the word, which is very common in speaking of experiments. I meant not induced by experiment or of set purpose.

2778. But have you not seen a great number of such cases in the bovine animals spontaneously?—Yes.

2779. Why do you single out these spontaneous cases in the horse and cat, while in the bovine animals and poultry which you have spoken of you made no mention of spontaneous appearance?—I imagine it was simply because it was vastly more rare in these animals. These were the only cases of natural tuberculosis in those two species, the horse and the cat, that I had seen.

2780. *Sheriff Berry*.—You mean it is much more common in the one class of animals than the other?—Much more.

2781. *Mr. Jameson*.—But the distinction you were drawing was between those two cases in which it had appeared spontaneously, and the other cases in which apparently the conclusion is that they had been inoculated?—I think it would be straining it to put that interpretation upon it, and it was an idea that did not occur to me.

2782. Was it not this, that you meant that in these cases you could not trace any cause for the horse and the cat taking it?—No; I simply must have meant, as I use the word frequently in that sense, that it was not an experimental case.

2783. But neither were the bovine cases experimental?—No.

2784. Why do you call the one spontaneous and not the other?—As I have said, the only explanation that occurs to me is that it was because of the rarity of the disease in these two latter species.

2785. I think you there say, and you still agree, that you have never met with any case where the tubercle deposit has been in the muscles?—No.

2786. Then question 5073, “Have you met with any case where “the tubercle deposit has been in the muscles?—No, none.” Generally speaking, is it the muscles of the animals which are used for human food?—Yes, it constitutes the bulk of the carcase.

2787. And therefore there is a very remote chance of bacilli or spores of bacilli of tuberculosis being found in what is usually used for roasts of beef?—There is simply the risk, which I mentioned before, that in local tuberculosis there is always a danger of the bacilli being thrown into the blood stream, and then they would be distributed throughout the muscular system, although you might not have naked-eye or even microscopic evidence of it.

2788. Is not the risk an infinitesimal one?—I should scarcely say infinitesimal, but I think it is not a great risk.

2789. I think you also expressed the opinion that compensation should be given for animals slaughtered or seized on account of tuberculosis?—No; I did not intend to express that. I should recommend that an attempt should be made to eradicate the disease by killing the animals found to be tubercular.

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2790. At question 5071 there is this passage, "Do you think
"there is any danger in the use of milk from tuberculous cows
"if the udder is not affected; have you any evidence upon that
"point?—No, I have no evidence upon that point." 5072. "But
"generally you would object to use the milk from an animal which
"knew to have tubercle, even if the udder were healthy?—
"I should think there was always an element of danger."
Do you mean by that that where the udder is not unhealthy
there is a comparatively small risk in milk from a tuberculous
animal?—I mean that till that date the milk had not
been conclusively shown to be dangerous when the udder was
healthy, but it has since been shown.

2790-1. *Sheriff Berry*.—What has been shown?—It has
been shown that in a series of cases in which no detectible
alteration was present in the mammary glands, the milk con-
tained bacilli. At least, it was capable of exciting tuberculosis in
a considerable proportion of the animals inoculated.

2790-2. *Mr. Jameson*.—The milk is drawn directly from
the blood and the mammary glands, is it not?—It is not drawn from
the blood.

2790-3. What is it drawn from?—It is manufactured by special
animal cells, which nourish themselves from the blood.

2790-4. It is secreted from the blood circulation?—It is secreted
by special cells which nourish themselves, like all the animal cells,
from the material which exudes out of the blood vessels.

2791. And are these cells likely or not to be chosen by the
bacillus of tuberculosis as a nidus?—They are not chosen, so far as
my observation goes—not specially chosen. The bacilli are found
chiefly in the cells immediately outside those that form the milk.

2792. Where the bacillus is likely to take up a habitation?—
Yes.

2793. And the fact of the bacilli being there might make the
milk tuberculous?—The milk would not be tuberculous till the
bacilli were thrown into the ducts in which the milk is formed.

2794. Till a tubercle is broken up?—No, it is not a question
of breaking up, but an extension of the tubercular process.
Perhaps I might be allowed to add that I do not think that it
is an extension, in these cases in which the milk is affected
where the udder appears to be healthy.

2795. What extension do you give?—The belief among path-
ologists is that when bacilli are circulating in the blood stream
they occasionally pass through the membranes of vessels, and may
be thrown out on free surfaces, or into cavities without exciting
a lesion on their way.

2796. And the special danger of milk comes from it always
being consumed raw?—That is its great danger, and from the
fact that frequently the bacilli are in it in great numbers.

2797. On the Continent generally I think there is no throw-
ing away of the carcasses of animals locally affected by tubercu-
losis?—It depends upon what you mean by locally affected.

2798. Such as the lungs being stripped off and leaving two
healthy sides?—I think everywhere, so far as my information

goes, in France and Germany to which my knowledge extends more particularly, the practice is to condemn where it is found affecting the walls of the body cavity.

2799. Not if it affects the lungs?—According to the French decree, if it is found in the lungs and nowhere else, the carcase may be passed.

2800. But it is only in France a decree of that nature has been propounded?—I believe the regulations are practically the same in Germany.

2801. As to Berlin, I see you have got in the *Journal of Comparative Pathology* for March, 1889, an extract from Adam's *Wochenschrift*—is that a German publication, published in Berlin?—I think it is published in Augsburg.

2802. And an article on meat inspection at the Berlin abattoir or slaughter-house, p. 72?—Yes.

2803. There I see it says, "Tuberculosis was detected in 4300 cattle, 8 calves, and 6393 pigs, and on account of that disease the entire carcases of 985 cattle, 8 calves, and 1442 pigs were condemned, while 8322 organs or parts were withheld from consumption." Now, you notice that out of 4300 cattle which were found to be affected with tuberculosis, only 985 were destroyed altogether?—Yes, I observe that.

2804. Does not that show that in Berlin at all events they cannot have an order such as they have in France, but that in the great bulk of cases where the carcases are merely locally affected they preserve the sound lungs?—I believe that the proportion of cases there in which single organs were withheld were cases in which the body cavities were not affected, but I should say that the information given there is as full as it was in the report from which that is extracted. It did not contain precise evidence upon that point.

2805. But in your experience of cattle affected with tuberculosis, if you had a number like 4300, what percentage of these do you think would be so affected with general tuberculosis as to render them quite unfit for food?—I think the proportion of general tuberculosis is not very high; but it must be remembered that in Germany the meat inspection is much more efficient than it is here, and that slight cases are not likely to be overlooked.

2806. You think, then, that consistently with a careful inspection with a view to public safety, it is quite a proper and natural result that only about one-fourth of the whole cattle found to be affected with tuberculosis should be destroyed?—As a matter of opinion, I think that if we had a rigid inspection at all our abattoirs, probably not more than 25 per cent. of the animals affected with tuberculosis in any degree would have it extending to the body cavity.

2807. And then they would not be condemned?—According to the French decree, they would not, if in the organ in which it was found it was not very advanced.

2808. In your opinion it would be right not to condemn them?—I should hesitate to say that. You would not entirely get rid of the risk to which I referred, because you never can be perfectly

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Prof. 2809. But is not that risk, taking the number of cows, really an infinitesimal risk?—No. I would hesitate to call it infinitesimal.

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2810. It is a small risk, is it not?—I think it is not great. I think we have not sufficiently accurate data upon the point really to make one think so little of it where the public health is at stake.

2811. You think, then, that if it had been strictly carried out, every one of the 4300 should have been thrown away?—No, I do not commit myself to that.

2812. But I want your opinion.—I think that it would be, at any rate, an immense advance on what is generally practised in this country if we had the French decree. I did not say that it would absolutely exclude the possibility of tuberculosis.

2813. But you think that the risk would be so slight that it would not be worth while carrying it further than the French have carried it?—I don't say what it would be worth.

2814. You would rather not give an opinion?—I am trying to keep my mind open to the evidence on both sides.

2815. You view, and quite rightly, the matter as one that has not been thoroughly expiscated?—Yes; I think that it is not thoroughly investigated. I think the extent of the danger is not fully known, but there is a danger.

2816. I suppose there is far more danger encountered by us every day of taking the spores of bacilli into our lungs than there is, even under the present system, of our getting bacilli into our bodies by eating cattle which have been locally affected?—It entirely depends upon where you go.

2817. Are not the spores of the bacilli going everywhere in the air?—No, I think experiments disprove that assumption.

2818. They will be found in all great centres of population?—No; they are found in the rooms of consumptive patients, and in consumptive hospitals, and so on.

2819. Do you not agree with the Commissioners' report that inhalation is the commonest way of getting the bacilli into the human subject?—Yes, I believe it is the commonest way.

2820. I suppose you think very little of the statement that the tuberculosis which we have in this country has been caused by the eating of diseased flesh?—Yes; I think that is not a great proportion.

2821. Can you say it is any proportion whatever?—So far as I know there is no absolutely conclusive evidence to show.

2822. You cannot say that it is one in 10,000 cases of tuberculosis?—I think I would not be justified in fixing the number. I should decline to attempt to state it even approximately.

2823. It is your view that the danger of getting tubercular disease from eating flesh from tuberculous animals has been very much overrated?—By some.

2824. I see in your journal for December, 1888, p. 354, you say this—"But the question of the danger of the flesh or meat from

“tubercular animals stands as yet on quite a different footing. The experiments that are generally cited as bearing on this point are of little value.” Do you adhere to that statement?—Yes.

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2825. Then you say—“Thus, the cases in which animals have been infected by feeding with obviously tubercular organs or tissues in the raw state were valuable at the time when the infective nature of tuberculosis and the identity of tubercular processes in animals and men were still disputed. But it is quite inadmissible to adduce these results as proving that ‘human phthisis comes frequently from the butcher’s stall.’” Do you adhere to that statement?—Yes.

2826. Is it correctly described in the passages following, written by yourself:—“M. Nocard, in a first series of experiments, inoculated guinea pigs by intra-peritoneal injection of muscle-juice (raw) from eleven cases of generalised tuberculosis in cows. Each guinea pig received ten drops of the fluid, and not one of the animals contracted tuberculosis. In a subsequent series he tested in the same way the infectivity of the muscle-juice in ten cows with widespread tubercular lesions (lungs, peritoneum, lymphatic glands, etc.), each guinea pig receiving one cubic centimetre of the juice. Out of forty animals thus inoculated, only one became tubercular. Bollinger has conducted a similar series of experiments, the muscle-juice from twelve cows affected with tuberculosis in various degrees being inoculated by intra-peritoneal injection into sixteen guinea pigs. None of these were thereby affected. It thus appears that in thirty-three cases of bovine tuberculosis, evidence of the infective power of the muscles was only once obtained. But, further, it is only right to point out here that even these experiments are very far from imitating the actual conditions of risk to which human beings are exposed, for, in the first place, the juice was employed in the raw state, and in relatively enormous doses; secondly, it was injected into the peritoneum—a much more potent mode of infection than by the alimentary canal; and finally, the animals experimented upon were guinea pigs, which, it must be admitted, are in all probability far more easily infected than the human species. The above-cited experiments appear to show that the danger of tuberculosis being communicated to human beings by the ingestion of meat from tubercular animals has by many speakers and writers been greatly exaggerated, and this view is strongly supported by the fact that in the great majority of cases of human phthisis the lesions indicate some other path of infection than the alimentary track”?—Yes.

2827. It was in December last that you wrote that?—Yes, but I should say that since then I have noted experiments of a similar nature that give a somewhat different result—viz., inoculation and feeding with flesh and muscle juice in which a considerable proportion of the animals experimented with became tubercular. I did not know that at the time, but the article was written to show, not that there was no risk, but that it had been exaggerated.

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2828. And more fuss has been made about this than ought to have been made, in your opinion?—I would not put it that way.

2829. That is the plain English of it?—I suppose they were conscientiously endeavouring to show what was the danger, and I thought that the danger was exaggerated.

Cross examined by *Mr. M'Kechnie*.

2830. You say that the bullock was in a comparatively early stage of the disease?—I said the piece submitted to me appeared to be in the early stage of the process.

2831. You did not examine the whole carcase?—No.

2832. There was a specimen of what submitted to you?—A piece of the diaphragm.

2833. Was that all?—That was all.

2834. What was the size of it?—About the size of my hand, I think.

2835. About two inches by three?—Slightly larger.

2836. That is the superficial extent?—Yes.

2837. What is the depth?—The depth of the normal diaphragm increased by the tubercular growth on it. The normal thickness of the diaphragm is somewhere about a quarter of an inch.

2838. That portion of the surface was a very small one for a tuberculosed surface?—It was entirely covered with tuberculosis.

2839. But it was a very small surface—a very small part of the diaphragm?—Yes, a small part of the diaphragm.

2840. And you can only say that it was tuberculosed at all from the fact that you found giant cells and from the external appearances?—No. I did not describe minutely its histological structure, but I mentioned what was the most important diagnostic appearance—the giant cells.

2841. How did you find them?—By staining them, and with the microscope.

2842. Did you find bacilli in them?—No.

2843. Did you subject the rest of the pieces to the microscope?—It was impossible. It would have taken a month or six weeks or more, to subject the whole of it. I took pieces from perhaps four or five different parts, and each of these was cut into many sections, and then I selected a number of sections from each of these.

2844. Did you find bacilli in these?—No bacilli in any of those I examined.

2845. Is this the first case of tuberculosis in which you found no bacilli?—No.

2846. Then you may have tuberculosis without the bacillus?—Oh, no. Bacilli may be there, and you may not be able to identify them.

2847. I thought the bacillus was the only conclusive proof of the presence of tuberculosis?—It is the absolutely conclusive proof to convince a sceptic who knows nothing about the minute structure of the tubercular lesion; but it is not necessary to convince me.

2848. Do you attach any importance at all to the bacillus?—

Yes. There are conditions of the tubercular growth, which I have said is not always uniform, which do not specially distinguish it from other growths that are non-tuberculous.

2849. Do you attach any importance at all to the presence of bacillus as proof of the presence of the disease?—It is the easiest evidence that you can produce, if bacilli are there.

2850. But you don't think it is the only evidence?—No; undoubtedly it is not the only evidence, because you can produce tuberculosis by inoculation or feeding.

2851. Suppose you take decomposing flesh from an animal that has never suffered from tuberculosis, and inoculate a healthy animal with that, can you produce tuberculosis?—No; the thing is quite absurd to suppose so.

2852. You must have the tubercle for inoculation?—You must have the tubercle organism—the tubercle bacillus, or its spore.

2853. And you have no active tubercles without this bacillus?—None.

2854. And having found no bacilli at all in the piece of this animal submitted to you, are you prepared to affirm that the carcase was unfit for human food?—Yes, I am prepared to affirm that that is my opinion, that I think it would be distinctly dangerous as an article of food.

2855. Is there any danger if the bacilli are not received in the human body?—I don't quite apprehend the question.

2856. Is there any danger of a human being taking tuberculosis from ingestion of food if there are no bacilli present?—No human being can contract tuberculosis except as the result of the tubercle germ entering into his body—the tubercle bacillus or its spore.

2857. Having seen no tubercular bacilli or their spores in this animal, how can you say that there is any danger to human life from ingestion?—Because, as I have already said, it had a structure which enabled me to identify it as a tubercular growth.

2858. This animal was dead, and the tubercles would not go on developing after the animal was killed?—That is not what I mean. Given a case of tuberculosis such as this; I could not demonstrate the bacilli, but I have the most perfect confidence that if I had been allowed to inoculate a guinea-pig with the material taken from this diaphragm, it would have died.

2859. Why did you not do it to make sure?—Because I did not apprehend that there would be time. There would not have been time. As a rule, you are not safe to kill the animal under four weeks. Usually six weeks is the time allowed.

2860. You think, whether bacilli are present or not, if you see this peculiar structure, the food is dangerous to man?—I would have no hesitation in saying that.

2861. Was this local tuberculosis?—It was local to the part. It affected the pleura.

2862. Is this bacillus an animal organism?—No, it is a vegetable organism.

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2863. What is the normal weight of the lungs of an animal of this kind two years old?—I really could not state at the present time. It varies, of course, with the size of the animal.

2864. But there must be something that you call the normal weight?—I would rather not express an opinion. I have not made it a matter of investigation.

2865. Do you not know, as a scientific man, what the weight of the lungs is?—I don't know what is the average weight of the lung of a two-year-old bullock.

2865-1. But whatever the normal weight is, tuberculosis does affect the weight?—If it were very advanced, I should think it would affect it; it would add to the weight of the lung.

Re-examined by *Mr Ure*.

2866. Have you any doubt that the portion of the animal which was submitted to you was tuberculous?—None.

2867. Was the portion sufficient to enable you to make a satisfactory examination?—Yes, much more than sufficient.

2868. And although you found no bacilli, had you any doubt that bacilli were there?—I have no doubt that bacilli were present in that animal's body.

2869. Could the appearances you saw have been produced otherwise?—I don't think so; I have never seen the same lesion produced otherwise.

2870. So far as you understand the practice in Germany, would this ox have been condemned there?—I think so.

2871. And in the case which my friend cited to you from your journal, were the particular portions of the animal affected not stated?—It is simply stated as I mention there.

2872. But you don't know whether the body cavities were affected or not?—No.

2873. And is that decisive?—If the body cavity is affected, I think the animal ought to be destroyed.

2874. You understand that to be the practice in Germany and France?—Yes.

2875. Have you any doubt that the bacillus is present before the tubercle is visible?—No, I believe the tubercle bacillus is always present. It is the propagation of the tubercle bacillus that leads to the production of the tubercle.

2876. Will you tell us whether it is held by scientists that spontaneous generation is possible?—I think it would be impossible to find a scientist who holds that opinion.

2877. Will you explain why it is that your experiments in pure cultures demonstrate that the bacillus is separate from the cell?—Suppose one inoculates a tube of this artificial soil—that means the transfer on the point of a needle of a number of bacilli—it is open to anybody to say that there may have been present a subtle chemical poison taken from the body, but after a certain time you inoculate another tube and add the material to ten thousand times its bulk of soil. That would, of course, dilute the most active poison to such an extent that we must believe it to be innocuous, and yet you can do that twenty times, till the original

hypothetical poison is reduced to the most infinitesimal trace, and the activity of the virus is not thereby diminished.

2878. You have been asked, with reference to your evidence before the Commission, whether you thought there was great danger in taking milk, and you gave an affirmative answer to that question at question 5068, "Do you consider a similar danger would arise from the consumption of imperfectly cooked tuberculous meat?—A similar danger, but not quite so great, I think." Do you adhere to that opinion still?—Yes.

2879. My friend asked you whether you had ever met with a tubercular deposit in a muscle, and you replied in the negative. I refer you to question 5070—"In what part of the animal have you generally discovered tuberculosis?—In the lung, the liver, the lining membranes of the chest, abdomen, the lymphatic glands, and in the udder." Do you adhere to that view?—Yes.

2880. Do you attach importance to the fact that you have found it frequently in the lymphatic glands?—Yes, very considerable importance to that, in connection with passing the carcase for human consumption—that is to say, the body and the limbs.

2881. Why is that?—Because there are groups of lymphatic glands there that are far more frequently the seat of disease than the muscles.

2882. And are they all through the body?—No, but they are found in groups both in fore and hind limbs, and in connection with the chest.

2883. Do you adhere to the opinion expressed in 5059—"Is there any similarity, in your opinion, between the disease in the human subject and that in the bovine subject?—I think there is a very possible identity"?—Yes, and I should be inclined to strengthen it, because the whole tendency of recent investigations is to show that there is no discoverable difference in the bacillus as taken from the two sources, human and bovine, and there is no essential difference in the lesion generated in the two.

2884. Do you adhere to your answer to 5061—"Have you observed any important difference between the germs of the bovine and human tubercle?—No, none"?—Yes.

2885. In your evidence here you were asked about compensation. Is it your view that tuberculosis should be included along with pleuro-pneumonia as a disease under the Contagious Diseases (Animals) Act?—Perhaps not simply that it should be placed alongside of pleuro-pneumonia. I think special legislation would be required to deal with it by itself.

2885-1. And the cattle should be slaughtered?—Undoubtedly.

2886. You have been asked about a passage which appeared in the *Journal* in December last with reference to certain experiments as to ingestion. Do you entertain a stronger opinion now than then with regard to the communicability of the disease through ingestion?—It has been strengthened simply by the knowledge of the later experiments to which I referred, in which similar attempts to communicate were more successful.

2887. Is opinion maturing on this subject?—I fancy it is. Evidence is accumulating.

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2888. Do you agree with the conclusions come to by the Committee in paragraph 21 of their report relative to the mode in which the growth of tubercles is induced?—Yes, I think all these are possible modes of introduction.

2889. Do you agree with that view, as presented in that paragraph?—Yes.

2890. Advert to paragraph 46—"Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals"; does that express your view on that subject?—If that expresses the view that one cannot exclude the possibility of bacilli being present in the muscle, even when we have not naked-eye or microscopic evidence of them, I should be inclined, in the present state of my knowledge, to unhesitatingly assent to that.

2891. But you think that there is a danger to public health more or less?—I think there is a danger.

2892. Which ought to be avoided if possible?—It is desirable to avoid it.

2893. Suppose the lungs of an animal had certain nodules or tubercles in them, would that affect their flotation in water?—The lungs would float in water unless the tubercle deposit was very extensive. Even a widespread or a miliary deposit, in which there are thousands of tubercles in the lungs, would not make them sink.

2894. *Sheriff Berry*.—I just want to be quite clear in what way it is you consider that this would have fallen under the French decree?—The French decree provides that wherever the tubercular process affects the lining membrane of the chest or abdomen, the entire carcase shall be condemned, and in this case it extended to the chest, at any rate.

2895. In what way did it extend to the chest?—The tubercular process extended to the lining membrane lining the diaphragm. The chest cavity is bounded in a backward direction by a sort of partition which is called the diaphragm. The pleura is what lines the whole of the chest, including the diaphragm, and when the diaphragm is affected usually other parts of the pleura are affected.

2896. What I want to know is whether this would not be removed by the process of stripping?—My opinion is that stripping cannot be relied upon to remove the whole tubercular growth.

2897. Could it not be removed by that process?—I think it would be extremely difficult to remove the whole of it. It is conceivable that it might remove it, but I think in the ordinary process of stripping there would be great danger, and almost certainty that it would not be all removed.

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Professor JAMES M'CALL, *sworn*, examined by
Mr. Comrie Thomson.

2898. You are a member and Fellow of the Royal College of Veterinary Surgeons?—I am.

2899. And Principal of the Glasgow Veterinary College?—
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2900. You have been a teacher of veterinary science for the last thirty years, first in Edinburgh and then in Glasgow?—Yes. Prof. J.
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2901. You are also inspector for the City of Glasgow under the Contagious Diseases (Animals) Act, and also inspector for the Privy Council?—Yes.

2902. In addition to these appointments, you have considerable practice throughout the country?—Yes.

2903. Do you remember in December, 1887, a conference being held here between representatives of the Local Authority of Paisley and a sub-committee of the Health Committee of Glasgow on the question of tuberculosis in cattle?—Yes.

2904. And arising out of that, I think, on the invitation of the clerk of the Local Authority, you addressed a letter stating your views on the subject?—Yes.

2905. That letter is addressed by you, as veterinary inspector to the Local Authority, to the Town Clerk, dated 3rd January, 1888, and I now read it to you. (Letter now put in and marked No. 16 of process.) Are the statements of fact and scientific opinion contained in that letter adhered to by you?—They are.

2906. What followed upon that?—Certain action was taken.

2907. Is that embodied in the minute that you have there?—Yes; it is a minute of the magistrates' committee which I shall hand to his Lordship, and which culminated in proceedings being taken. It is dated 24th January, 1888 (marked No. 17 of process).

2908. Now, shortly after that, in the course of the spring and early summer of 1888, in consequence of common action by various Local Authorities, was there a departmental committee appointed by the Privy Council which examined witnesses, of whose evidence we have a record in the blue book on the table?—Yes.

2909. You gave evidence before that committee on 8th May, 1888?—Yes.

2910. Your evidence with regard to tuberculosis appears in the print on page 131, from question 4232, to page 134, question 4313. You have read the notes, and they are correctly reported?—Correctly reported.

2911. There is one question I desire to put to you, question 4246 *seq.*:—"Would you feel justified in going into a market and "seizing for the purpose of slaughter any animals that you "assumed were suffering from tuberculosis?—I would. Is it "a disease that is easily detected in contradistinction to other "lung diseases?—In a certain stage it is easily detected and in "others it is difficult. Is that stage in the early stage?—It is "very difficult in the early stages if the animal is a sound animal "in other respects. I have a specimen of the effect on the "muscles and bones. (The witness here showed parts of the "sirloin of a short-horn bullock in which, with the naked eye, "tubercles could be seen in the fibres of the flesh round a tubercular abscess and within the marrow of the bones.)" You also

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say at question 4265, "Then you think the disease is spread by inhalation?—Yes, and ingestion; eating the food mouthed by affected animals. Although it is not necessary that the lungs should be affected?—You have tuberculosis disease affecting the bowels. You have tuberculosis disease affecting all the individual organs of the body, but it more frequently affects the lungs than any other organ." Do you adhere to these statements?—I do.

2912. Professor Brown, who was one of the members of that Commission, is the head of the veterinary department of the Privy Council, and is Principal of the Royal Veterinary College of London?—Yes.

2912-1. And Professor Horsley is a pathologist in London University?—I believe so.

2913. Are these men of eminent distinction?—Yes.

2914. And certainly the former is a man of great practical knowledge?—Yes.

2915. Have you perused the report that was issued by that Committee on Tuberculosis?—Yes.

2916. Do you agree with the conclusions that they came to?—I agree with almost all that has been written.

2917. In particular, I refer you to the conclusions set forth in paragraph 61:—"Both from direct experiment and from clinical observation it is now proved, not only that the fowl contracts the disease from man by reason of its swallowing the expectorated bacilli, but also that it thereby forms a vehicle for the further transmission of the disease to man and the lower animals." I also refer you to article 65, branch one:—"The two points to be borne in mind in considering remedial measures are (1) that the disease may be transmitted to man from the lower animals, and from man to the lower animals by one or other of the methods which we have already discussed, and especially by the ingestion of tubercular diseased meat or milk." Do you agree with that?—I do.

2917-1. Are you of opinion it may be communicated in one of the four ways set forth in paragraph 21, by inhalation, by swallowing, by direct introduction, and by heredity?—Yes, I am.

2918. In one passage, article 22, they say—"Inhalation would appear to be the commonest way in which the disease is contracted."—that is not in your mind antagonistic to the statement in article 65, sub-section 1, in which it is said it may be transmitted to man from the lower animals, especially by the ingestion of tubercular meat or milk?—That is so.

2919. Is it frequently from inhalation?—Yes.

2920. But it may be transmitted by the ingestion of diseased meat?—Probably more frequently.

2921. Is it not a mistake to say that the bacilli of tuberculosis, as has been represented, are everywhere present; they are generally to be found in an infected atmosphere, such as the sick chamber of a consumptive patient?—Yes, we would expect to find them there.

2922. And inhalation is a mode of receiving the infection?—Yes.

2922-1. In health you think that inoculation by ingestion is probably more common?—Yes, I mean in the lower animals. May 30,
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2923. But there may be communication to man also by the ingestion of diseased meat?—I should think so—that is my opinion. Prof. J.
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2924. It is impossible to reduce that to absolute proof by experiment?—You cannot do it.

2924-1. Because you would kill your man?—Yes.

2925. In paragraphs 24 and 25 they say—"Numerous experiments have similarly been performed upon the possibility of the tubercular virus entering the body through the alimentary canal. In these experiments tubercular secretions, *i.e.* mucus, saliva, milk, &c., portions of tubercles from diseased tissues and cultures of the bacilli have been swallowed by various animals (calves, pigs, sheep, rodents, fowls, &c.), with the effect that the disease has fatally followed the ingestion of such infective material. It is obvious, therefore, that the digestive fluids do not necessarily exert an injurious influence upon the poisonous bacilli." Do you agree with that?—Yes.

2926. The result of that being that the secretions, the gastric juice and so on, do not necessarily prevent the bacilli becoming noxious to the human frame?—That is my belief.

2927. Are you of opinion that the use of tuberculous flesh for human food should be prohibited?—Yes.

2928. Particularly I refer you to articles 43 to 46 on page 22, and I read to you 46: "Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals"; do you agree with that?—Yes.

2929. How would you describe the disease?—It is a parasitic disease.

2929-1. Does it affect the system?—Yes.

2930. The whole system?—It may affect the whole system.

2931. That part of the sirloin of beef that you showed to the Committee showed visibly to the naked eye tubercles within the fibres of the flesh round an abscess?—Yes.

2932. As well as within the marrow of the bone?—Yes, it was quite obvious to any one who knew a tubercle that they were tubercles.

2933. Was the animal from which that was taken a prime animal?—The information that I received was that the bullock belonged to a party in the neighbourhood of Perth, and they drove it into the auction mart to be sold, and it was sold at £23. It was killed, and the inspector at Perth sent a cut to me of about 14lbs. in weight, and asked me to express an opinion as to the fitness of the animal for human food. I examined it, and I found a tubercular abscess, and round the abscess for a radius of about two inches or so tubercles in the muscles and in the flesh perfectly distinct to the naked eye. I sawed the pelvic bone through the middle, and in the marrow you could see

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quite distinctly tubercles similar to those in the flesh. I wired back and wrote afterwards, that I thought the carcass should be destroyed. I got a letter a day or two afterwards to say that the carcass had been dressed and sent to Glasgow. That is the history.

2934. Had there been also a spreading of the tubercular virus as manifested by the fact that it appeared in the marrow of the bone?—Undoubtedly. The bacilli must have gained entrance by the lymph stream or the blood stream to get to the marrow of the bone. I am not aware of any other way in which the organisms could have floated into the bone except by the lymph stream or the blood stream.

2935. Does that show to your mind that that is a risk (I will not put it higher) to which an animal suffering from tuberculosis is exposed, that there will be a leakage from the affected part to the other portions?—Quite so.

2935-1. Is it the fact that the bacillus may be embedded in some substance, and may at any moment burst its bonds and get into distribution?—Yes, quite so.

2936. Do you think that, although the disease may for some time remain apparently in an inert condition, a change in the condition of the animal, as for example, let me say, rapid driving, might lead to the disengaging of the bacillus?—Reasoning from what I know of other diseases, such as pleuro-pneumonia in cattle, which is also a parasitic disease, the organisms may remain shut up in cysts in the lungs for months, and after a while the wall bursts and the organisms escape in the breath, and the animal gives the infection to other animals. There is not the slightest doubt in regard to that.

2936-1. £23 was a fair price for a bullock?—A good price.

2937. Was that the price that Mr. Couper gave for the bullock now in question?—I believe it was something about that.

2938. *Mr. M'Kechnie.*—You may assume it was £22 or £22 10s.

2939. *Mr. Comrie Thomson.*—Then I was near the mark. Have you also read and considered the abstract of the report of the French Congress last summer?—Yes, I have glanced over it.

2940. You noticed the resolutions that were carried, with a minority of three against them. I particularly direct your attention to the second resolution, and the decree following upon those recommendations, embodying this, that whenever the disease was seen to extend from the individual organism of the cells of the cavities of the body, “the flesh of tuberculous animals shall be excluded from consumption, (1) if the lesions are generalized, that is to say, not confined exclusively to the visceral organs, and their lymphatic glands; (2) if the lesions, although localised, have invaded the greater part of an organ, or are manifested by an irruption on the walls of the chest, or of the abdominal cavity. Such flesh excluded from consumption, and also the tuberculous viscera, shall not be used as food for animals, and ought to be destroyed.”—I cordially agree with that.

2941. Going no further, would that, in your opinion, be a very useful advance upon our present system here?—It would indeed.

2941-1. On 8th May last, did you examine the carcasses in question, a bullock and a cow?—I did.

2942. I think you gave certain certificates which you now produce?—Yes (marked Nos. 18 and 19 of process).

2943. And you conclude with the statement that they are unfit for food?—Yes, those are my certificates.

2943-1. And are they true and correct?—Yes.

2944. Was either of those animals suffering from a mere pleuritic attack?—They were suffering from a pleuritic attack, but it was specific tubercular pleuritis.

2945. Not from simple pleurisy?—No.

2946. Could that be accounted for by overdriving?—Certainly not.

2947. Do you know a disease called lymphadenoma?—Yes.

2948. Was either of those animals suffering from that?—No.

2949. They were suffering from tubercular pleuritis?—Yes.

2950. That was visible to the naked eye?—Perfectly visible to the naked eye.

2951. Could you give us a little detail as to the appearance of the cow, and then of the bullock?—First, of the cow, in the pleura on the left side over the ribs and near the diaphragm, and on the diaphragm, there was a number of little spongy bodies, and there was an inflammatory deposit as well. Those spongy bodies were of the nature of tubercular eruptions.

2952. That is on the pleura on the left side?—Yes.

2953. Consisting of tubercles?—Yes, in the early stage of development, and tubercular inflammation well marked.

2954. What was visible on the diaphragm?—Identically the same. The corresponding right side of the pleura was healthy.

2955. Was this on the costal pleura or the pulmonary pleura?—Both, but at the present time I am speaking more of the costal pleura.

2956. In the case of which you have been speaking, is it the costal pleura?—Yes. Of course when I speak of the diaphragm, the pleura passes on and clothes it on the one side and the peritoneum on the other; as regards the abdomen, on the left side, the peritoneum covering the diaphragm, a small portion of it had been removed, had been taken away altogether, the probability is because it was covered with tubercular deposits. There must have been something.

2957. Yours was the first visit of any person from the authorities?—Yes.

2958. You were brought in on the 8th?—Yes.

2959. And it had been removed?—Yes, a small portion.

2960. We must not assume anything against the owner of it, but it was not there?—No. The peritoneum on the right side was healthy. As to the lungs, they were studded here and there with small caseous tubercles, cheesy tubercles, and on the apices of both lungs there were tubercular deposits. That is all about the cow. With regard to the bullock, the pleura on the left side over the ribs and the posterior half of the chest, and on the diaphragm, was slightly thickened. There were small blood vessels to be seen, and

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on the surface of the costal pleura and diaphragm we had a tubercular exudation. There were also little nodules on the same parts in the condition of tubercular growth. There was a similar appearance presented also by the right side. The pleura covering both lungs was much in the same condition as the costal pleura on the ribs.

2961. Inflamed?—Spreading and inflamed. There were tubercular lymph exudations, and there were tubercles in both lungs—small caseating tubercles. I think that was all that was important.

2962. Was the case of the bullock more acute than that of the cow?—Undoubtedly.

2963. Do young bullocks take tuberculosis more readily than aged bullocks?—No, but it runs its course more quickly. I don't say a young bullock is more liable to it, because it is a disease that is not constitutional. It invades the body of a young animal, and it will run with great rapidity.

2964. In addition, did Professor Limont show you specimens from both of the animals which he had prepared for the microscope?—Yes, I looked at them through the microscope, and found the usual evidence of this disease, the bacilli.

2965. From both animals?—Yes.

2966. Apart from the presence of the bacilli, had you satisfied yourself from the external naked-eye observations that there was tuberculosis in both animals?—Yes. It is only within the last few years that we were made aware of the specific organism, but for thirty years I have been in the habit of dealing with carcasses of animals affected with tuberculosis, and I had no more difficulty in dealing with them then than during the last seven or eight years. The naked-eye appearances to me are perfectly characteristic of the disease.

2967. We now know that the presence of specific bacilli fixes the character of a tubercle?—Yes, we call it tuberculosis then without doubt.

2968. Does it exclude the idea that it is anything else but tuberculosis?—It does. We look upon the specific organism as that which produces the disease.

2969. It is not merely the concomitant of the disease spontaneously generated?—No, all specific diseases depend upon specific organisms.

2970. That rule was well known before Koch's discovery of the bacillus?—It was believed at all events.

2971. It has been believed in the scientific world that specific diseases were induced by specific organisms for many a long year?—That was our belief, but of course we are now able to speak without doubt.

2972. No one had seen the bacillus of tuberculosis till Koch's discovery in 1881?—That is so.

2973. You are familiar with what are called ptomaines or alkaloids?—Yes, we look upon them as the excretions of the organisms.

2974. Do they, as well as the organism itself, propagate the

disease?—No; unless you have the organism, you cannot have the ptomaine or excretion.

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2975. That is the other end; and you could not have the ptomaine without the beast that produces it?—No.

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2976. But when the ptomaine gets distributed through the body, it carries mischief?—It has a destructive action, but it could not produce the organism which produces it.

2977. I may take it that in your opinion it is absolutely established that tuberculosis is produced by a microbe known as bacillus tuberculosis?—That is my belief.

2978. And that is the prevailing belief among scientific men?—It is.

2979. In condemning the animals in question as unfit for food, do I understand you to do so independently of any view that the whole of an animal should be destroyed if there is any appearance, however slight, of tuberculosis?—Yes. I consider that such carcasses should be destroyed, however slightly affected.

2980. You are using the word "tuberculosis" as distinguished from the presence of tubercle; wherever there is tuberculosis in an animal, then you think the whole carcase should be destroyed?—I do.

2981. Tell us why.—Because it is dependent upon a specific organism, which apparently has the power to circulate through the whole body, and it may be in circulation and we do not know it. As a rule, we are not aware of the presence of specific organisms that have gained an entrance into the body until sometimes weeks or months have elapsed, but still they are there and at work, and although we may not be able to see a tubercle in which we have got the bacillus present it does not follow that the bacillus is not in the body.

2982. And after the tubercle appears, and after the mischief has been wrought for some time and culminates in the appearance of the tubercle, do you assume that the bacilli or their products, the spore or whatever it may be, may be distributed in other parts of the body which may appear unaffected?—Yes.

2983. And that is the danger?—Yes.

2984. The existence of tuberculosis shows that the organisms have been there for some time before?—Undoubtedly.

2985-6. And that they have had an opportunity of being distributed by the lymph or blood stream into all parts of the body?—Yes.

2987. It is the case that these organisms seem to select certain congenial soils in the body?—All of them.

2988. Generally, I presume, where a tissue is weakened in some way?—Yes. Speaking of some organisms, they will only grow in certain tissues of the body, whether that body is in a healthy or unhealthy state. Take the special organism of pleuro-pneumonia, it will only grow in the connective tissue of the lung; if we put it into the connective tissue of the tail it will die there, but in the lung it will live there and breed.

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2989. It has only a limited adaptability?—Quite so.

2990. There are no places where the specific organism of tuberculosis does not seem to thrive?—It seems to thrive in almost every organ in the body—in the eye, in the inside of the bones, the glands, the lungs, the brain, the flesh, and less in the muscle than anywhere else.

2991. But you do find it in portions of the flesh that are used for food?—Yes.

2992. Glands that are embedded in fat, and so on?—Yes.

2993. In the bullock, assuming that histological examination showed that there were bacilli in the prepectoral gland, would that indicate to you that already there was a distribution of the organisms begun from the place where the tubercle appeared?—I should say so.

2994. And that, if you had known it at the time, would have confirmed your opinion that the whole carcase should be condemned?—Yes, but I had quite sufficient evidence of that without cutting into the glands.

2995. But that is a kind of illustration of what happened?—Yes.

2996. And if the organisms once get into the lymphatics they may spread very speedily?—Yes. I have known an animal in perfect health, to all appearance, and dead in six weeks from tuberculosis, and the whole of the peritoneum and the pleura clad with tubercles.

2997. There was a question that I put to you, and you gave me an answer that was quite satisfactory, but perhaps it might be well to clear the matter up. We are faced here with what is called the extreme view, that wherever there is any appearance, however slight——

2998. *Mr. M'Kechnie*.—Don't make a speech to the witness.

2999. *Mr. Comrie Thomson*.—I think I learned how to put questions some time ago, and I am putting them to the witness in my own way.

3000. *Mr. M'Kechnie*.—If you appeal to me, I don't think you have learned it yet.

3001. *Sheriff Berry*.—I think, so far as Mr. Thomson has gone, he has not been transgressing.

3002. *Mr. M'Kechnie*.—My friend will put the question, but the witness will not answer it until I had an opportunity of considering it.

3003. *Mr. Comrie Thomson*.—We are faced with the view, which is sometimes called the extreme view, that the whole of a carcase should be destroyed if there is the slightest indication of tubercular disease in any part of its body. My question is whether, in the opinion you have given that both of these animals were unfit wholly for human food, you have been adopting that extreme view, or whether you are adopting the view—what I may call the more moderate view, or the view in the French decree?—It is the French view, but it is the view I hold myself. You have got acute tuberculosis,—in the bullock very acute tuberculosis, and in the other you may call it sub-acute or

chronic, but it is marked,—and I see no way of dealing with these carcasses except to condemn the whole of both.

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Cross-examined by *Mr. M'Kechnie*.

3004. I think the meeting with the Paisley sub-committee was with reference to the prevalence of this disease among milch cows in dairies?—Yes.

3005. That was the subject that you were chiefly concerned about, and the remedy for it you thought was to obtain statutory powers for dealing with the disease with a view to insure that the carcasses were not to be used for human food. I am quoting from the minute prefixed to the letter to Dr. Marwick which my learned friend read. (Reads minute.) The two things you had before you at that conference were therefore the condition of milch cows in dairies, and the obtaining of statutory powers for dealing with them?—Yes.

3006. You did not consider at that congress anything about dealing with presumably healthy animals, such as bullocks brought in for sale?—No, I don't think there was anything particular in regard to that.

3007. I will show you the paper if you wish it. I am coming to your letter afterwards, but there is nothing at all in the paper but what I have said?—It was principally for that.

3008. Is it not entirely for that?—Yes; but I don't know that it was limited to any particular subject.

3009. Look at the minute, and point out to me anything else but that in it?—I am not the writer of the minute.

3010. No, but you were present at the meeting?—I believe I was.

3011. You see you were?—Yes.

3012. Does the minute correctly express what passed?—Well, I believe it does.

3013. Is it all belief? Is it not the case that that minute correctly expresses what passed?—I think it does.

3014. And it refers to nothing but what I have stated?—No.

3015. How long have you known this disease of tuberculosis?—For thirty years.

3016. And for thirty years you have been in the habit of allowing the carcasses of animals so affected to be sold in the Glasgow market if the affected parts were condemned?—I had no power to deal with an animal affected by tuberculosis.

3017. But that has been your practice?—I have no power to deal with an animal affected by tuberculosis.

3018. I am not speaking of power—I am speaking of fact?—It is not the fact that I have allowed them to be sold. I could not prevent them being sold.

3019. They were sold?—Exactly; but then I did not sell them.

3020. But the diseased parts were condemned?—Yes.

3021. Your opinion is that tuberculosis may pass from the animal to man in various ways?—Yes; that is, reasoning inferentially.

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3022. The sale of cattle of all kinds in Glasgow has largely increased within the last thirty years?—I believe it has.

3023. Enormously?—I believe it has.

3024. And the death-rate from tuberculosis has largely decreased?—Admitting so; but it does not follow that other causes have not been at work as well.

3025-6. According to your view, can there be tuberculosis without the bacillus?—No; you cannot have tuberculosis without the bacillus.

3027. When did you come to form that opinion?—Within the last seven years.

3028. Was it at the commencement of the seven, or towards the end of them?—I think from whenever I was aware that there was a bacillus in operation.

3029. Is that from Koch's discovery?—Yes.

3030. It never entered into your imagination that there was such a thing until Koch found it out?—There you are wrong.

3031. Well, I am putting a question.—I entertained the idea that specific diseases would depend upon specific organisms for long before specific bacilli were discovered.

3032. That is, living organisms?—Yes.

3033. Did you make any experiment to find out whether there were such organisms?—No.

3034. Did you ever see this living organism called Koch's bacillus until he found it out?—No.

3035. Can you have tubercle without having tuberculosis?—We may have bodies which we term tubercle, and yet the disease is not tuberculosis.

3036. Whom do you mean by "we;" do you mean yourself?—Exactly.

3037-8. So that you may have tubercle without tuberculosis?—Yes. I will show you a body which, to the naked eye, appears to be the tubercle of tuberculosis, and yet it is not the tubercle of tuberculosis. There are other diseased conditions in which you have tubercle present which bears the greatest resemblance to the tubercle of tuberculosis, and yet it is not the tubercle of tuberculosis.

3039. Then you may have, as I understand, tubercle which is not tuberculosis?—Quite so.

3040. May you have tubercle without the bacillus?—When the bacillus tuberculosis locates itself in a part there is always tubercle formed.

3041. That is not my question. You told me you might have tubercle without tuberculosis. Now, my next question is, may you have tubercle without the bacillus?—You may have a body, to the naked eye, that simulates tubercle, and yet it is not tuberculosis.

3042. You surely understand the question; may you have tubercle without the bacillus?—You can have tubercle of glanders, and within that tubercle you have the specific organism of glanders, but it is a totally different organism from the bacillus tuberculosis which inhabits the tubercle of tuberculosis.

3043. That is not the question at all; the question is very simple, and admits of a very easy answer, may you have tubercle without the bacillus?—Yes, the bacillus may have escaped from the tubercle.

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3044. But my question is, may you have tubercle without the bacillus having been there at any time?—That will not be bacillus tuberculosis.

3045. *Mr. Comrie Thomson*.—You may have tubercle from some other disease?—Exactly.

3046. *Mr. M'Kechnie*.—Is there any bacillus at all behind that tubercle?—If there is a tubercle and no bacillus present, then there cannot be anything behind it, but you may have bacilli circulating somewhere else.

3047. If the bacillus is elsewhere he is not in the tubercle; he is from home?—Exactly.

3048. But you have seen tubercles that were not the tubercles of tuberculosis?—I have seen tubercles which were not present in bacillus tuberculosis.

3049. You told me that long, before Koch's discovery, you always suspected and believed in the presence of a living organism as a tubercle behind the tuberculosis. Now, is there any living organism behind the tubercle which is not tuberculosis?—You may have the bacillus of glanders.

3050. My question is, is there any living organism which is the cause of that tubercle?—There must be an organism if there is tuberculosis.

3051. That is not the question; you told me that there is a tubercle which is not tuberculosis?—Yes, and I explained that that tubercle was inhabited in some cases, as, for instance, in glanders, by the specific organism of glanders.

3052. What is that?—A parasite.

3053. A living organism?—Yes.

3054. Why do you not call it a bacillus at once?—All parasites are not bacilli.

3055. Have you ever seen any living organism behind a tubercle that was not tuberculosis?—I have seen behind a tubercle the organism of glanders.

3056. Is it not the case that tubercle is often caused by degeneration of tissue without there being present any specific living organism?—That is the opinion of some.

3057. Of many, I should think?—Of some.

3058. Some doctors?—Yes.

3059. Some eminent men; but you differ from them?—Yes.

3060. Now, I see you were making a speech some time in 1884, which is given at p. 163 of Fleming's book, and there is a passage of it on p. 172 to which I wish to refer you. That speech was delivered by you in 1884; were you quite familiar with tuberculosis then?—Yes, I knew about tuberculosis.

3061. You told me you knew about it for 30 years?—Yes.

3062. You say there, if you are correctly reported—"There seems to be some difficulty in understanding the subject of tuberculosis. Are we to look upon a tubercle as indicative of

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3063. But the question is upon your first sentence—"There seems to be some difficulty in understanding this subject of tuberculosis;" you said that—what did you mean?—That it is a difficult matter to understand.

3064. What was your difficulty in understanding it in 1884, seeing that you had known it by that time for 25 years?—The difficulty is this, that here you have got a tubercle in the lung, or in the liver, or some other organ, and it seems to have been in that condition for a length of time, and yet this animal still remains in good condition.

3065. And the tubercle not advancing?—The tubercle apparently not advancing.

3066. And the tubercle may never come to tuberculosis?—It may never apparently come to tuberculosis.

3067. And it may come?—It may come.

3068. These are the tubercles which I think you were in the habit of calling angleberries at first?—I never called them angleberries.

3069. Did the fleshers call them that?—Yes.

3070. You have heard them called that?—Yes.

3071. And you were quite familiar with angleberries?—Excuse me, that is a different thing. You have a large number of these tubercles there, and the case is a clear one of tuberculosis. I speak of where you have got a solitary tubercle.

3072. These things called angleberries occur on the pleural costa?—Yes, and in those cases you find the bacillis of tuberculosis present.

3073. Then what was the difficulty in understanding the subject at that time?—It was in the case where you had probably in the centre of the lung a single tubercular mass or tubercle. It might be in the lung or it might be in the liver, but it has calcified. It has evidently been there for a length of time, and the animal is in good condition, and you don't see any evidence of any other disease. Now, if we were to look upon that condition as indicative of tuberculosis still existing, it is strange the animal is still keeping its condition.

3074. But you may have all that and not have tuberculosis?—It appears so.

3075. Well, that is what I wished you to say long ago; that is a condition of matters which resembles tuberculosis, and which may heal or which may develop into tuberculosis?—Yes.

3076. But I understood you to say that if you were to mistake that condition for tuberculosis, there is scarcely any animal free from it?—Quite so. If you take the little tubercle that you will find in the liver and sometimes in the lung and in the spleen, if you take all these as indicative of tuberculosis still existing, then there is scarcely such a thing as a perfectly sound animal.

3077. And yet it is the fact that these may develop into tuberculosis?—I am not prepared to say that they will develop into tuberculosis.

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3078. No, you are not prepared to say so, but you are not prepared to say that they will not develop into tuberculosis?—If tubercle bacilli were inside of them and they commenced to degenerate, then the chances are tuberculosis would follow.

3079. Now, as you described this bullock, did you find these appearances upon the pleural costa?—No; it was different altogether.

3080. What is the difference?—The difference is this, take the bullock for example, here you have an acute tubercular exudation upon the surface.

3081. What is tubercular exudation?—It is an exudation in which we have got the bacillus present, or if not present, at all events it has been there, but generally speaking it is there.

3082. If he has been there and is not there now, where has he gone to?—He may have escaped.

3083. Out of the animal?—Not at all, but simply the specimen you are dealing with does not contain it.

3084. Do you think that one would have been sufficient to cause all the lesions you saw in the bullock?—No.

3085. Then they could not all have escaped?—Neither they had escaped; they were present.

3086. You found tubercular exudation, and you found tubercular pleuritis?—Yes.

3087. Is not tubercular pleuritis another way of describing pleurisy?—No; it is different.

3088. What is the difference?—It is a specific form of it.

3089. But what is the difference?—To the naked eye do you mean?

3090. No, the scientific difference?—Ordinary pleurisy is a simple constitutional disease attacking the body from constitutional causes, but tubercular pleuritis is a tubercular inflammation depending upon the presence of the organism.

3091. Tubercular pleuritis is inflammation of the pleura, is that so?—It is more. It is an inflammation of the pleura depending upon a specific cause.

3092. What is the difference between it and tuberculosis?—I would just call it an early stage of the same disease.

3093. This inflammation then may pass into tuberculosis?—No. I rather put it, not that it may pass, but that it has passed. From the very first the organism is there present, and it is the cause of the irritation that sets up the inflammation.

3094. But as pleuritis is there, you know it is inflammation?—Yes.

3095. You are only at the stage of inflammation here?—Yes.

3096. Now, inflammation may pass off?—Yes.

3097. All inflammations may pass off?—Specific inflammations slowly.

3098. Give me any inflammation that is not curable?—This form of inflammation of the pleura, as a rule, terminates fatally. That is how it cures itself.

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3099. Are you able to say positively that if this bullock had been allowed to live, and had not been overdriven, this inflammation would have developed into tuberculosis?—Overdriving of that bullock, in my opinion, had nothing to do with it.

3100. I understood that, but I am talking of the convalescence; if it had not been overdriven, and if the animal had been allowed to live, are you prepared to say that this inflammation would not have convalesced?—My opinion is that it would never have convalesced.

3101. Why?—It would have gone on from bad to worse.

3102. Why?—Because the pleuritic inflammation would have extended; the organisms would have penetrated further along; we would have had next the specific form of peritoneal inflammation, and acute tuberculosis so extensively diffused as that, in my experience, is always fatal.

3103. How long would it take to develop into all that?—I have known it do all that and prove fatal to the animal in six weeks.

3104. Six weeks; that is a pretty long illness, is it not?—No.

3105. In inflammation?—No; it is not simple inflammation at all; it is a specific form of inflammation. You don't have the same pain in the sufferer in this form of inflammation as in other forms.

3106. Do you know Professor Williams of Edinburgh?—I do.

3107. Have you read his books?—I have consulted them—looked at them; I don't know that I have read them all through.

3108. Is he an authority on the subject; I call him Professor, but I think he is like yourself a Principal of a Veterinary College?—Yes.

3109. Was he along with you when you saw these carcasses?—No.

3110. Are you aware that he did see them?—I am not aware of the fact that he did. I have never seen him since.

3111. Are you aware of it not as a fact?—I was told that he had seen them.

3112. For the Corporation?—I suppose so.

3113. If Principal Williams, in the last edition of his book, says that where you have local tuberculosis only, the flesh of the animal may be safely taken as human food, do you agree with him?—I could scarcely agree with him about tuberculosis.

3114. Why?—Because the organisms are there present.

3115. Professor Williams says at p. 346 of his book, in the edition of 1874, and it is repeated at p. 421 in the edition of 1884:—"The flesh of such animals is very often of a fair and even superior description, and the only question of importance in connection with the matter is, whether the flesh is fit for human food. This question is asked, because very often such flesh is condemned. If, however, we can only train our minds to consider that these matters are mere growths, that in fact they are not more injurious to the quality of the flesh than warts or other excrescences on the skin, the feeling of fear may be overcome": do you agree with that?—I do not.

3116. What, in your opinion, is the commonest way for these bacilli to find entrance into the human system?—I could not give an opinion upon it with regard to the entrance into the human system further than probably it is by inhalation.

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3117. The Commissioners before whom you were examined say in paragraph 22—"Owing to the fact that the signs of disease are most commonly found in the lungs, inhalation would appear to be the commonest way in which the disease is contracted"; do you agree with that?—In the lower animals, I am not convinced that it is more frequently induced by inhalation than by ingestion, because cattle, as they are housed, are generally tied up in pairs, they together eat the same food, and then, when they lie down, they breathe directly into one another's mouths.

3118. Is that not inhalation?—Yes; but then they were eating as well, there is ingestion as well; they were doing both, but I don't think much importance is to be attached to that.

3119. But in the human subject, it is mostly got by inhalation?—I should think so, because I don't think individuals are much in the habit of eating the food of one another.

3120. Have you ever known a case of tuberculosis in the human being which was caused in any other way than by heredity?—I don't know of a human subject; I am no authority upon that at all.

3121. You say that the disease can be transferred from one animal to another by ingestion, but can you say that it can be transferred from one animal to another by ingestion of flesh?—Not in my own experience; but I can give you some authorities here.

3122. But that must have been experimental, because domestic animals do not eat each other?—That is so.

3123. Now, in these experiments it was not sound flesh that was used?—Yes; there were some experiments that I will quote to you, if you wish, that were made with sound flesh.

3124. Ingested into the stomach?—Yes.

3125. Give me an experiment of sound flesh causing tuberculosis in a sound animal—sound animal food ingested into the stomach of a sound animal causing tuberculosis.—(The witness here consulted a book.)

3126. What are you reading from?—Page 81 of Fleming's book. Under article 3, it is said—"Infection takes place less readily by the ingestion of flesh than by means of the substances mentioned in 2, and yet it was employed successfully in 76 of the cases shown in the above table." He gives a table here, if you will allow me to read it.

3127. The table is on page 80, and I am very anxious that you should read it; but bear in mind my question was sound flesh, ingested into the stomach of a sound animal.—(The witness here read a table of results given on page 80 of Fleming's book.)

3128. That is a great list of experiments, but you will not find a single one in which the matter is not tuberculous, or the animal from which it is taken is not tuberculous, and that is all we know about it; is that the only answer you can give me to my question,

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 Prof. J. M'Call. to refer me to the table?—No; I think I could have given you a better answer if I had known exactly the line you were on, and what matters you were to refer to; I might have been better prepared.

3129. Do you mean to say you do not understand the question?—I understand the question perfectly well.

3130. Well, you have no right to understand the line, but here you have apparently 76 cases?—Yes, of eating the flesh of tuberculous animals.

3131. Take the very last of the cases in the table, "five fed with tuberculous matter from birds," that means affected with bacilli or stuff containing bacilli. However, is that reference to the table and the paragraph which you have read from page 81, the only answer you can give to my question?—There are other answers, though probably not quite what you wish.

3132. It does not matter what I wish; give your own answer?—"Here, again, we have among the experiments those made by Gerlach:—Of 46 different animals submitted to experiment, and fed with uncooked tuberculous substances, 35 were infected; of 35 animals fed with uncooked flesh from tuberculous cows 8 contracted tuberculosis; and of 15 fed on cooked tuberculous matter 10 became diseased."

3133. Do you think that answers my question?—Not quite; I should like to have given a more satisfactory answer. Then, here is another paragraph, if you will allow me to read it:—"Under another series of experiments morsels of the flesh of a tuberculous pig were roasted in the flame of a gas burner, and two rabbits were inoculated with the juice expressed from these. Two other rabbits were inoculated with juice from pieces of non-roasted flesh. The latter died 120 days after inoculation."

3134. But that is from a tuberculous pig?—Yes.

3135. And given to a rabbit, which is about the most sensitive to tuberculosis of all living animals?—You are quite right.

3136. Well, have you answered my question yet?—Not as I should like.

3137. Are you done searching for an answer?—Yes; I was done long ago.

3138. Then you admit the answer to be unsatisfactory, but at present you are not prepared to make it better?—No.

3139. But you think if you had time you could?—I think I could.

3140. Is this disease that you call tuberculosis a blood disease?—No; it is a parasitic disease.

3141. Does it affect the blood?—The organisms may be found in the blood.

3142. They are carried by the blood?—We believe so.

3143. You have made experiments to find them in the blood?—No, I have not made experiments.

3144. I thought you had?—No, I never said so.

3145. I refer to the proceedings of the second general meeting of the National Veterinary Association, held at the Victoria

University—I suppose that is Owen's College—on Wednesday and Thursday, July 30th and 31st, 1884. Do you remember reading a paper at that Congress?—Yes.

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3146. You say there, page 28—"I accordingly paid a visit to the farm (that is, a farm in Ayrshire), and a more pitiful sight I never witnessed. Several members of the herd, young and old, were at death's door and reduced to skeletons, and indeed there was, to outward appearance, scarcely a sound animal present. I had two of the cattle killed, one far advanced in disease and the other only slightly. Before killing the animals my colleague, Dr. Limont, Professor of Physiology and Morbid Anatomy, examined the blood microscopically, and we both failed to detect the specific organism." Who are the "we"?—Dr. Limont and myself.

3147. Then it is the case that you did examine the blood microscopically on two occasions at least?—I examined the blood, but I thought you meant that I was making myself out as an authority. I know the case quite well that you refer to, and we failed to discover anything.

3148. You failed to discover this specific organism?—Yes.

3149. The short and the long of the case is, I suppose, that you failed to find the bacillus?—Exactly.

3150. And you expected to find him?—Of course, we would have been very glad if we had seen him, but we found the organisms in the tubercular deposits which we took with us to the college. We know the difficulty of finding them in the blood, but we discovered them in the body.

3151. You told me you would have been glad to have met him in the blood; why?—Because I would have had the pleasure of seeing the bacillus in the blood, and being able to say I had seen him there.

3152. *Mr. Comrie Thomson.*—Which is a rare thing?—Exactly.

3153. *Mr. M'Kechnie.*—Have you ever, in all your researches, seen the bacillus of tuberculosis in the blood of any animal?—No, I have not.

3154. Why, therefore, do you say it is a blood disease?—I did not say it was a blood disease.

3155. Why do you say the bacillus is carried by the blood?—I did not say it was a blood disease.

3156. Well, I will accept the correction. Why do you say it is carried by the blood?—I said it was my opinion that it was carried either by the blood or the lymph stream.

3157. Did you also examine for it microscopically in the lymph stream?—No, I did not.

3158. Why did you not, if you were of opinion it was carried by that stream?—Because we had the bacillus in the tubercular deposits plentifully all over the body.

3159. Then, it comes to this that you have never seen this bacillus travelling about the body in your life?—No, you are quite right; but I think we could prove that it does travel, and other organisms of a similar character travel also.

3160. You have never come across him at anyrate?—

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3161. *Mr. Comrie Thomson*.—Not on a journey—not *en route*.

3162. *Mr. M'Kechnie*.—Neither *en route* nor taking a rest in the blood stream?—We can prove that he must travel, and travel for a considerable distance before he rests.

3163. He must come from somewhere, you know, before he gets there?—Yes. We only know of two ways by which he can travel, that is through the blood and the lymph stream.

3164. You never found him in the blood or in the lymph stream?—Never.

3165. Have you ever found him in the tissues of any animal?—Yes.

3166. In the flesh?—Yes.

3167. When?—In that case that was mentioned before the Departmental Committee.

3168. You mean this great case?—No, I don't say "great."

3169. This case that you gave to the Privy Council; that is the only case?—That is the last case, at all events.

3170. Would you be surprised to learn that this is regarded as a medical curiosity?—Indeed!

3171. Would that surprise you?—Well, I am very glad if I have been able to give them a medical curiosity.

3172. How long would you have that bone in your possession before you gave evidence?—I could not say.

3173. Was it a year?—No, I don't think it would be.

3174. How was it preserved?—It was preserved in spirit.

3175. And have you ever seen a case like it since?—I have not been looking for them.

3176. But you are looking at sirloins of beef pretty often; have you ever seen the like of this?—No.

3177. Was this a case by itself?—No, I don't think so.

3178. Can you give me another case like it?—Speaking for myself, I cannot.

3179. Did you apply any test to see whether the bacilli in this case were Koch's bacilli or not?—Specimens were handed to Dr. Limont in the usual way, and he examined them and found them.

3180. Were you present?—I was not present when he was doing it, but I saw them after it was done.

3181. You saw the bacillus after the investigation?—Yes.

3182. What was it?—It was just the usual bacillus that you find.

3183. Find in what?—Find in the tubercular deposits of tuberculosis.

3184. Or in tubercle?—In tuberculosis.

3185. Or tubercular deposits?—Yes, of tuberculosis.

3186. You think these are the same?—The same.

3187. What kind of animal was this found in?—It was a bullock.

3188. What class?—A three-year-old bullock.

3189. An Ayrshire?—I did not see him in life.

3190. And you have not found that out?—No, I did not see him in life.

3191. May he have been a polled Angus?—I don't know.

3192. You know the polled Angus come largely from a stock which is in-bred?—

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3193. *Mr. Comrie Thomson.*—It is described as a shorthorn bullock.

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3194. *Mr. M'Kechnie.*—(To witness) How did you know last year he was a shorthorn bullock when you don't know now?—The letter, no doubt, would say so.

3195. The report says:—"The witness here showed parts of "the sirloin of a shorthorn bullock." Now, you could not tell me what kind of a bullock he was?—I could not tell you just now, but if I go to my file of letters I will be able to tell. No doubt that is correct, because when they wrote to me about it they would tell me all about the animal.

3196. But you knew nothing about the history of the animal?—No.

3197. And the animal, for anything you know, might have inherited tuberculosis?—Yes.

3198. Or any other disease?—Yes.

3199. There are many diseases that affect the bones of animals?—Not many specific diseases, I think.

3200. But there are some?—Not many.

3201. Do you mean to say that consumption is the only disease which affects the bones of human beings?—No; I don't say that; scrofula.

3202. Is scrofula the same as consumption?—Scrofula and tuberculosis are, to my mind, one and the same.

3203. Why do you mention scrofula as affecting bones,—is there any other disease?—There is actinomycosis; there is rheumatic disease; there are many diseases of bones.

3204. Have you ever known a case before where tuberculosis attacked the bones of a shorthorn bullock, or any other bullock?—I have not been looking for them, but I have not the slightest hesitation in saying that disease of the bones is not at all an uncommon thing in tuberculosis. In fact, according to experiments—I cannot remember the names of all those who experimented—the marrow of the bone is the first affected.

3205. My question was, have you ever seen a case yourself but this one?—I have seen tuberculous diseases of the bone, but I never saw a specimen in a perfectly healthy animal before, of the value of that animal.

3206. Was this the only case you have seen in a shorthorn bullock, or any bullock?—In a healthy animal.

3207. I would put my question thus, is this the only case of it you ever saw in a shorthorn bullock, or any other bullock?—It is the only case that I have seen of tubercular disease of cattle, but I have seen tubercular disease of the joints of cattle over and over again.

3208. I am not speaking of joints; I am speaking of bones. Is this the only case of this kind you ever saw in a shorthorn bullock, or any other bullock?—The only case I ever saw of tubercular disease of the marrow.

3209. Then it is a medical curiosity?—No; it is no medical

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curiosity at all. It is a medical curiosity to myself and others who have not seen many, but there are many recorded cases of tubercular disease of the marrow of the bones of cattle.

3210. You gave evidence before the Commission last year?—Yes.

3211. The Commission was not appointed to judge of the fitness of such flesh as we are dealing with for human food?—No, I don't think so.

3212. The terms of the reference your Lordship will find at the commencement of the report. It first deals with pleuropneumonia, and then it goes on, "also to inquire into the nature and extent of tuberculosis in the United Kingdom, and the means to be adopted to arrest its progress." These were the terms of the reference, and in preparing yourself for examination you did not understand that you were preparing yourself to give evidence as to the fitness of the flesh for human food?—No, not specially.

3213. The inquiry—I read you the terms of it—was mainly as to the character of the disease, and the best means of stamping it out?—Yes.

3214. And that was the point, I presume, you were chiefly concerned about then?—Yes.

3215. But that is not the point here. As you know, a good deal of American meat comes into the city?—Yes.

3216. Is it all stripped before it comes?—I don't know.

3217. Do you never see it?—I don't take to do with dead meat; it is not in my department. It is the living animal I have to do with.

3218. Is there anybody in Glasgow who protects the public against American dead meat?—If it is taken to the dead-meat market, it will be inspected by the usual inspectors.

3219. Who are they?—Superintendent M'Lellan, I think, and Beresford, if I recollect right.

3220. It comes in what is known as sides?—Yes.

3221. The internal organs, the membranes, being cut away?—Not to my knowledge. They do not strip the pleura or peritoneum to my knowledge.

3222. Don't you know that that is the fact?—No.

3223. Then you don't know how it comes. Have you any idea how many hundreds or thousands of tons a year come into Glasgow?—No. I know there is a large quantity, but I have nothing to do with it; it does not fall under my department.

3224. Have you ever heard of any side of an American carcass being condemned by the Glasgow authorities?—No, I have not.

3225. And the bacilli may be there?—They may.

3226. Dead meat also comes in from the country in large quantities, from all parts of the country?—I believe so.

3227. Have you ever known of any proper inspection of these carcasses, or any inspection at all?—I believe they are inspected.

3228. Have you ever known of them being condemned?—There are large quantities of meat condemned in the market.

3229. For pleuro-pneumonia?—I don't know for what diseases they are condemned.

3230. Have you ever known of any of these sides of beef from the country being condemned for tuberculosis?—I believe there are many of them condemned.

3231. Have you ever heard of any?—Yes, I understand they are frequently condemned by the police.

3232. *Sheriff Berry*.—Condemned for tuberculosis?—I believe so.

3233. *Mr. M'Kechnie*.—Have you anything at all to do with this matter of tuberculosis in the market?—No, it is not a scheduled disease.

3234. Then, you have nothing in the world to do with it?—No.

3235. I refer you now to page 29 of that same speech you made. You there say—"The flesh and the milk of an animal affected with tuberculosis is, in my opinion, in all stages unfit for human consumption; and, acting on my opinion, I have for more than twenty years condemned every carcase that has passed under my control." Is that true?—It is true, as far as I could exercise my power of doing it.

3236. What do you mean by saying that you have, acting on your opinion, condemned every carcase which has passed under your control?—I had complete control of the slaughter-houses here for about a year and a half during the rinderpest time, and I condemned all the tuberculous animals.

3237. You told me that you had nothing to do with anything but scheduled diseases?—Quite so.

3238. And tuberculosis is not a scheduled disease?—It is not.

3239. Still, you went to Owen's College on 30th and 31st July, 1884, and you made that speech?—Yes, and I meant by that that all carcases I had the power of condemning I did condemn. I had been asked out to other towns to look at carcases, and if I found them affected with tuberculosis I invariably condemned them.

3240. And you refer me now back to the old story of rinderpest in Glasgow, which I think is a quarter of a century ago?—In 1865, 1866, and 1867. That is the only time I really had power to deal with these carcases.

3241. And that was for three years only?—Yes.

3242. What did you mean by telling these gentlemen at Manchester, "I have for more than twenty years condemned every carcase which has passed under my control?"—Where I had the power to condemn them I did so.

3243. Did you lead them to understand that you were condemning animals in Glasgow market for tuberculosis?—No, I never intended such a thing.

3244. Then, in Fleming's book, page 172, there is a speech by you which I quoted from already, about tubercle. You say this—"I have all the dairies, slaughter-houses, and markets in Glasgow under my charge, and have ample opportunities for seeing this disease." The disease you are referring to there is tuberculosis?—Yes.

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3245. You go on—"In the dairies of Glasgow the malady is "very common," and so forth. Now, you told me a little ago that the slaughter-houses are not under your control?—They were under my control at one time; but they are only partially under my control.

3246. But in this speech in 1884 you say, "I have all the "dairies, slaughter-houses, and markets in Glasgow under my "charge?"—Of course, I meant in dealing with scheduled diseases.

3247. Were you at that time in charge of the slaughter-houses?—Any animals coming to the slaughter-house with my licence.

3248. But what you say is this, "I have all the dairies, "slaughter-houses, and markets in Glasgow under my charge, "and have ample opportunities for seeing this disease," which you have already said is tuberculosis. Now, why do you refer to scheduled diseases?—Because my charge simply extends to scheduled diseases, and if I send any animals affected with scheduled diseases to be slaughtered in a slaughter-house, these animals remain there under the charge of the police until I see them, and I deal with the carcasses as far as I have power.

3249. Then, it comes to this that what you meant by this speech was that you had only to do with scheduled diseases?—Yes, scheduled diseases; I never intended to convey anything else.

3250. Why did you tell them that you had to do with tuberculosis? You proceed to say, "I have ample opportunities for "seeing this disease?"—So I have ample opportunities of seeing it.

3251. Then you say, in the same year, that every carcase coming under your control is condemned?—Every carcase that I have the power to condemn.

3252. Have you ever condemned a single carcase for tuberculosis in the Glasgow markets?—I have not the power to do it.

3253. The question is, did you do it?—I had not the power to do it.

3254. Then you never have condemned a carcase for tuberculosis?—I have assisted in its condemnation frequently, but I have not the power to condemn it.

3255. What is your position under the Local Authority?—I am inspector under the Local Authority, of scheduled diseases.

3256. Is there another source of food supply in Glasgow besides this flesh—fowls?—There is.

3257. My learned friend read to you from the report of the Commission that the eating of fowls is a very dangerous thing, because they are often affected with tuberculosis, and you accepted that as fact. Is there any means in Glasgow of condemning fowls so affected?—Not that I am aware of.

3258. So that, while people may not eat the flesh of a tuberculous bullock, they may eat tuberculous fowls to their heart's content?—Apparently so.

3259. In 1884, had you arrived at any definite conclusion in your mind as to what constituted meat that was unwholesome? I mean to be quite fair with you, and I tell you that I am to read to

you again from your speech at Owen's College; but before I read that I ask you that question, had you arrived in your own mind at any satisfactory conclusion as to what was or was not flesh fit for human consumption?—No, I had not studied the whole question.

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3260. I refer to page 30, the last sentence there—"With reference to the system of inspection of meat at present in use, I am of opinion it should be placed on a more satisfactory basis, and in order to do this, definite conclusions should be arrived at by a scientific committee competent to deal with the matter as to what constitutes unwholesome or unsaleable meat." You thought at that time that that was a matter for investigation by a scientific committee?—Yes.

3261. You then wanted a scientific committee in this country to deal with the question of the wholesomeness or saleableness of meat?—Yes.

3262. In your judgment, wholesome and saleable ought to be the same?—Yes.

3263. Has any such committee sat?—I am not aware.

3264. What has happened since 1884 to change your mind upon this subject? In 1884, the practice in Glasgow was to condemn only the parts of animals locally affected; is not that so?—Yes, but I was not responsible.

3265. I am not holding you responsible for anything, but that is the fact. Now, what has happened——

3266. *Mr. Comrie Thomson.*—He has not said it is the fact.—I don't know it is the fact; I only speak for myself.

3267. *Mr. M'Kechnie.*—Don't you know it was the fact that parts of animals were condemned and the rest allowed to go?—Yes, I am aware of that.

3268. Now, what has happened, according to your judgment, to render it necessary to alter that practice?—You are speaking of the disease of tuberculosis?

3269. Yes?—What we know with regard to it.

3270. What more do you know except what the Frenchmen have said; do you know anything more than that?—We know that this disease tuberculosis can be produced by ingestion and inhalation and inoculation—that it can be transmitted from one animal to another.

3271. Well, I will not ask you further. I have a great deal more to ask, but I think the time has been fully taken up.

Re-examined by *Mr. Comrie Thomson.*

3272. I refer you to the same speech that my friend has been dwelling upon, delivered in 1884. Here is what you said. I will read the part that my friend read to you, and then I will read a part that he did not read to you. You say, at page 172, "I see animals affected with the malady standing about the markets of Glasgow." He read that, but you added, "But I have no power to deal with them"?—Neither I have at the present moment.

3273. And it is the fact that your power then and now is

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Prof. J. M'Call. 3274. And you are acting under the Local Authority, the Privy Council, and not under the police?—Not under the police.

3275. Did you hear Mr. Fleming, the chairman of that meeting, deliver his speech?—I did.

3276. He is at the head of the veterinary department of the army?—He is.

3277. Did you hear him say that every portion of an animal affected with tuberculosis should be destroyed?—I did.

3278. And you agree with that?—I do.

3279. Am I right in supposing that every little morbid growth in the form of a wart or similar thing is a tubercle?—Yes.

3280. But every tubercle does not imply tuberculosis?—Certainly not.

3281. I may call a wart on my hand a tubercle, I suppose, accurately enough?—Yes.

3282. There is a nodule or tubercle in glanders?—Yes.

3283. Then, the other disease you mentioned of actinomycosis, it has nodules or tubercles which are specifically different from the tubercle or nodule of tuberculosis?—That is so.

3284. And produced each of them by a separate organism?—Yes.

3285. So that your view I take to be this, that whereas you would destroy every portion of an animal that you were satisfied had tuberculosis, you would consider it unnecessary and improper to destroy portions of an animal which had tubercles, unless you were satisfied that these were the tubercles of tuberculosis, and still active. Am I accurate in describing your view?—You are.

3286. Do you know any teacher in the British or foreign schools—I mean of anything approaching to eminence as a colleague or teacher—who now maintains that tuberculosis is produced by spontaneous generation and apart from specific organisms?—I do not.

3287. I refer you to Professor Williams' book, to which my friend has been attaching some importance, very properly I dare say, and I refer you to page 424:—"Treatment of tuberculosis—" If the disease has passed beyond the very earliest stage, it is a "waste of time and money to treat animals suffering from tubercular consumption. It is far better to slaughter and make the best of them. I think, however, the time has arrived when tubercular diseases ought to be included in the Contagious Diseases (Animals) Act, and that an endeavour should be made to prevent its increasing frequency, even if it be found impossible to diminish it or stamp it out altogether." Do you assent to that?—I do.

3287-1. "It must be particularly borne in mind by the veterinarian that, as the conservator of public health, he should at all times discountenance the consumption of the milk of tuberculous animals, not only by human beings, but by the lower animals, for it has been abundantly proved (see page 418) that the milk of a tubercular cow

“ may be dangerous to human life, and when we reflect upon
 “ the fact that it is very largely consumed, principally by
 “ infants and young children, we may at least imagine the appal-
 “ ling consequences it may give rise to.” This was written so
 far back as 1874, and republished in 1884. “ The majority of
 “ the veterinary profession are in favour of preventing the flesh
 “ of all tubercular cattle, no matter what its condition and
 “ appearance may be, from being used as human food,” and the
 learned author goes on to say, “ For the reasons stated at page 421,
 “ I cannot support the wholesale condemnation of such flesh as
 “ human food, but whilst maintaining such flesh as fit for food,
 “ I must explain that if it presented any appearance of being
 “ watery, pale, or otherwise unhealthy, I should not hesitate in
 “ at once expressing my conviction that it should not be used as
 “ food for man. Let the veterinary surgeon, when called upon
 “ to give his opinion, consider the sacredness of his position, and
 “ even if he chance to offend a client, do his duty to his fellow
 “ beings.” These are your sentiments also, I presume?—Yes.

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3288. Now, turn back to the reasons stated by the learned author on page 421. I find that he details what then were absolutely new, or nearly so, the discoveries of Koch. He also refers to the experiments of Burdon Sanderson, the most eminent pathologist in Great Britain. You are aware that the experiments of Sanderson and others were for some time set against those of Koch?—Yes.

3289. But of recent years Koch's theory has been that adopted by the profession?—It has.

3290. You are not in a position to tell me how Mr. Burdon Sanderson accounts for his change of view?—No.

3291. Now, you were asked about pleuritis. Pleuritis is inflammation of the pleura, pure and simple?—That is the meaning of it.

3292. It may arise from various causes?—It may.

3293. It may arise, may it not, from constitutional disorder, in which there would be no specific organism present at all?—Yes.

3294. Was the pleuritis that you saw in the bullock in question the pleuritis arising from the specific organism which is the source of tuberculosis?—That is my opinion.

3295. You were satisfied of that, and I presume afterwards you were made absolutely certain of it?—Yes.

3296. My friend made a point that in one investigation you did not discover any bacilli in the blood. Is it not well known that the bacilli are very seldom found in the blood?—It is well known.

3297. You used an expression which seemed to give rise to some amusement, that you would have been very glad to find them there. I suppose every experimentalist and investigator takes a little pride in finding out what is rarely found?—Undoubtedly.

3298. That is the meaning of what you said, I suppose?—Yes.

3299. But if you found the bacilli anywhere in the system, they may be everywhere, is not that so?—Yes.

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3300. Because they are carried, and carried with great speed, by the lymphatic stream, and also by the blood?—Yes, by both.

3301. And although no mortal had ever seen them in the blood, would it not be a necessary inference that they were carried by it, because they are found here in one place, and there in another part of the body?—I think so.

3302. As to the ingestion of flesh from a tuberculous animal, the animal itself not being actually tuberculous—I mean, visibly tuberculous—are you prepared to state, on your responsibility as a professional man, that it has been proved that the flesh of a tuberculous animal being consumed conveys tuberculosis?—Yes.

3303. Those experiments that you were referred to seemed to distinguish between the consumption of tuberculous flesh or portions of tuberculous flesh, and the raw flesh of a tuberculous animal. By the latter, do you understand the flesh of a tuberculous animal, or a portion of it, which apparently is not diseased?—That is so.

3304. Is it not the case that there are many recorded instances of tubercular disease of the bones?—Yes.

3305. Now, my friend referred to what he called the object of the inquiry before the Privy Council Committee, and I have no doubt he read it quite accurately to you. It is “to enquire into “the nature and extent of tuberculosis in the United Kingdom, “and the means to be adopted to arrest its progress.” Would you tell me any object that that could have, except to secure safety in the food supply of the people?—Undoubtedly that was the great object.

3306. There is no other object that you could imagine. We do not use cattle as beasts of burden—at least, in this part of Scotland—so that was there any other object in having these inquiries except to secure, on the one hand, that cattle shall not be decimated by the ravages of disease, and on the other hand that the people shall not get unhealthy food?—No.

3307. Now, as to the American imports into Glasgow, there is a considerable amount of live stock that comes in, is there not?—A great deal.

3308. Both from Canada and the States?—Yes, from both.

3309. And you have the power—I do not know whether you have the power, but some official has, of slaughtering at the port of debarkation?—Yes, I have the power if affected with a scheduled disease.

3310. Do you know if any official inspects the dead carcasses or sides?—I am not aware of the system of inspection, but I suppose if these carcasses are taken up to the Moore Street slaughterhouse to the dead meat market to be sold, they pass the same inspection as carcasses coming from anywhere else.

3311. As dead meat coming from the country?—Yes.

3312. Of course, if stricter measures were taken about this tuberculosed meat, it would just so far reduce the risk?—Yes. We never have had a tuberculous living animal coming from Canada or America. I have examined the living animals for years, and I have not had a single one.

3313. Whatever other mischief they may bring, they do not bring tuberculosis?—They do not. May 30,
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3314. *Mr. M'Kechnie.*—Do you know more about the contents of the table on page 80 of Fleming's book than what is there set forth?—No. Prof. J.
M'Call.

3315. *Mr. Comrie Thomson.*—I put in as evidence all the documents that have been referred to. If your Lordship wishes, we can make an inventory of them, but they are noted in the shorthand writer's notes.

The evidence for the Prosecution was then declared closed.

EVIDENCE FOR RESPONDENTS.

Mr. HUGH COUPER, *sworn*, examined by *Mr. M'Kechnie.*

Hugh
Couper.

3316. Are you a wholesale butcher in Glasgow?—I am.

3317. And do you buy largely in the cattle market in Glasgow for retail to other butchers?—Yes.

3318. Do you buy the best animals?—The best I can get as a rule.

3319. Your trade requires that?—Yes.

3320. You remember buying the bullock in question in the cattle market in Glasgow?—Yes, I bought twenty of them in one lot.

3321. And the carcase which was seized was one of them?—Yes; I gave £22 odds each for the twenty.

3322. What kind of bullock was it?—I think he was originally an Irish bullock. I think he would be a calf that was brought from Ireland and fed in this country. He looked like that to me.

3323. What breed was he of?—A short horn breed.

3324. From whom did you buy him?—From Reid & Smith, cattle dealers.

3325. You paid £22 10s. for him, I think?—It was either £22 10s. or £22 5s. I paid for each of the lot. I bought twenty in the lot, and that was the average price.

3326-7. Was this one as good as any of the rest?—Just as good in quality; scarcely so big as some of them, but as good in condition. They were all in first-class condition.

3328. Was there anything wrong with the animal at all that the eye could see?—Not to appearance.

3329. Would you have bought the animal if there had been anything wrong with him?—No.

3330. On what date did you buy him?—On Wednesday, the 8th of May.

3331. Was the price the market price of the day for the best animals?—Yes, and it was above the average price of animals altogether.

3332. It was about the highest market price?—Yes,

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Hugh
Couper.

3333. You bought him on the 8th, and then he was taken to the slaughter-house to be killed?—Yes.

3334. And was seized by the police the same day?—It is the rule in our place that when we have any beast that there is anything wrong with at all, my men have got orders to call in the officer, and the officer, if he thinks there is anything wrong, detains it, and, of course, under the orders that he had got from the Chief-Constable, he said he would have to detain this animal and show it to Professor M'Call and Dr. Russell.

3335. Then, in place of trying to evade the police, you instruct your men, if they see any peculiar appearance, to call the attention of the inspectors to it?—There is no concealment in our place at all.

3336. *Sheriff Berry*.—Do I understand that your men called the attention of the inspectors to this animal?—Yes.

3337. *Mr. M'Kechnie*.—They asked them in, and they looked at the animal?—The police detained the animal, and, of course, they said, according to the order they had got from the chief, they would have to detain it, because they were not sure whether it was tuberculosed or not.

3338. Did your men have instructions, if they saw the least appearance of anything wrong with a carcase, to call in the inspector?—That is so.

3339. You are not always there yourself?—I am scarcely ever there.

3340. And the inspectors were called in, and the carcase was seized?—That is so.

3341. That is all you know?—Yes.

3342. Was it seized next day; was it detained on the 8th and seized on the 9th?—I had nothing to do with it after the 8th.

3343. Did Mr. Reid see it killed?—Yes, I called in Mr. Reid. When it was reported to me that there was one of the bullocks stopped, I called him in to identify it as one of his bullocks. He was satisfied it was one of them.

Cross-examined by *Mr. Ure*.

3344. Did you buy the lot for a slump sum on 8th May?—No, I bought them by the head.

3345. I thought you told us you bought a lot overhead at a slump sum?—Yes, at £22 odds each. I bought twenty of them in a lot.

3346. What did you give for the twenty bullocks in a lot?—£22 5s. or £22 10s. a head. I am not sure which.

3347. Why did you call in the inspector to see this one?—It is a standing order that my men have, if they see anything wrong they are to call in the police.

3348. And did they see something wrong with this one?—Certainly.

3349. *Mr. M'Kechnie*.—Just to identify the bullock, I think it had only one eye?—Yes.

Mr. CHARLES REID, *sworn*, examined by *Mr. M'Kechnie*.

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Charles
Reid.

3350. You are a partner of Reid & Smith, cattle salesmen, Glasgow?—Yes.

3351. You know the last witness Mr. Couper?—Yes.

3352. Did he buy a lot of bullocks from you on 8th May?—Yes.

3353. And did he buy from you, in particular, a bullock which had only one eye of that lot?—Yes.

3354. What was the price of it?—£22 5s.

3355. What condition was that bullock in?—It was in good condition, a grand bullock, almost as good a bullock as in the county.

3356. Was that a high price to get for him?—Yes, I thought it was a good fair price.

3357. A pretty full price?—Yes.

3358. Who did you buy that bullock from?—I bought it from Colonel Imrie.

3359. How many did you buy from him?—Eight.

3360. Where is his place?—Lunan, between Arbroath and Montrose, just at the sea side.

3361. How many did you buy from Colonel Imrie?—I bought sixteen beasts, but I left these eight for a month after that.

3362. And this was one of the eight?—Yes.

3363. You saw the carcase of that same bullock condemned?—Yes.

Colonel IMRIE, *sworn*, examined by *Mr. M'Kechnie*.

Col. Imrie.

3364. Are you proprietor of the estate of Lunan, near Montrose?—I am.

3365. Do you know Reid & Smith, cattle salesmen?—I do.

3366. You remember selling a lot of bullocks to them on 10th April last?—Yes, about 10th April.

3367. They removed a lot first, and then they removed a month afterwards another lot?—Yes.

3368. Was one of the bullocks sold to them a bullock with one eye?—Yes.

3369. How long had that animal been in your possession?—He was bought in October, 1887. He was then a weaned calf.

3370. Where did you buy him?—I think in Falkirk. An agent bought him; I did not buy him myself.

3371. In what condition was that bullock when you sold it to Reid & Smith?—It was in first-rate condition—prime condition.

3372. What was its history; had it always been in good health?—Not a single “vet.” ever came to see it, and it had not a day’s illness in my possession, nor anyone of the lot I bought.

3373. Of course, you keep a cattleman?—Yes.

3374. Did he ever mention to you, or did any of your servants ever mention to you that there was anything wrong with this animal?—Never.

3375. And so far as you know, it was a sound healthy animal, in prime condition?—Quite so.

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Dr. GEORGE GOLDIE, *sworn*, examined by *Mr. Jameson*.

Dr. G.
Goldie.

3376. You are medical officer of health for the burgh of Leeds ?
—I am.

3377. You have held that position for a period of sixteen years ?—Yes.

3378. Are you also the inspector under the Privy Council orders for the same burgh since 1878, when the Contagious Diseases (Animals) Act was passed ?—Yes.

3379. Are you constantly in the habit of examining animals and the carcasses of animals for use for human food, including sheep, oxen, cows, and swine ?—Yes.

3380. What is the average number of animals inspected by you per week ?—About 900 or 1000 cattle, and between 4000 and 5000 head of sheep per week ; that is not inclusive of importations.

3381. That is outside of your duties as inspector under the Contagious Diseases Act ?—Yes.

3382. Under that Act you inspect 3000 or 4000 head of cattle ?
—Yes.

3383. Some of which exhibit various forms of disease ?—Yes.

3384. On the 16th of this month, at the request of the agents for the respondents in this case, did you inspect the carcase of a cow ?—I did, at Yorkhill.

3385. You saw the whole carcase, including the sides and the internal viscera ?—Yes.

3386. Tell us what appearance that carcase presented generally as to nourishment and condition ?—The general appearance of the cow was, to my mind, very satisfactory. She was a fairly nourished cow ; I should say a particularly well nourished cow. The external side of the carcase presented itself to me first, and I must confess that it looked to be a very highly nourished cow as a cow. I then proceeded to examine the internal walls of the chest, and I saw there a tubercular deposit, as I thought it was at the first glance. I carefully examined it, and found, as far as my memory carries me, on the right side of the cow a deposit of about the size of a man's hand, with a tubercular nodule at the bottom.

3387. An adhesion on the left costal pleura ?—There had been an adhesion. I may say that I further examined the carcase carefully, all the serous membranes of the carcase, that is in the chest and in the abdomen ; I examined the kidneys and offal, where I might expect to find general tubercle, but I found nothing in the carcase itself except in that localised spot.

3388. You found no evidence of tubercular disease anywhere but in the lungs ?—Pardon me, I have not got to that yet. I found in the carcase no further evidence of tubercular deposit, but upon this localised spot in the chest, about the size of a man's hand. I next proceeded to examine the lung.

3389. And what did you find there ?—I found the basis of both lungs affected with caseous tubercular encysted enclosures. They were deposits of caseous matter, indicative of tuberculosis.

3390. They were encysted?—Yes, I should say they were distinctly so, quite hard.

3391. What is that a symptom of—that hardness and encysted character?—They were deposits that were innocuous in their character. I look upon them always as such.

3392. Did it betoken that the disease was active, or that it was stationary?—That it was stationary, I should say.

3393. Was there any tendency to suppuration or anything of that sort to be seen?—No, I saw none. I looked very carefully for that.

3394. And was the tissue of the lungs surrounding these encysted masses you have spoken to quite normal?—Quite normal.

3395. And healthy?—And healthy. In the other parts of the lungs I saw nothing unhealthy.

3396. Did you cut the flesh to see the appearance of it?—I did.

3397. And what appearance did it exhibit?—It exhibited the appearance of perfectly healthy flesh.

3398. Was it firm to the touch?—It was.

3399. And of a good colour?—Yes.

3400. Was it darkish in colour, did it strike you as that?—No, it did not strike me as that. I knew it was the carcase of an old cow.

3401. And is the flesh of an old cow generally more or less dark?—If she is a very old cow and is not very tuberculosed. If she is tuberculosed she gets pallid.

3402. If the tuberculous disease had spread, you would have expected the flesh to be pallid?—Paler than it was. I considered the carcase was a very good one, and the appearances were quite consistent with what I should have passed in my own town, and that is a very strong thing to say.

3403. I was to have asked you that. Would you have passed this carcase yourself, if it had been exhibited to you in Leeds?—Yes, and I give it as my opinion that it should have been passed here.

3404. In your opinion, was the carcase of that cow fit or unfit for human food?—It was fit for human food. I may explain that I saw it I think eight days after she was slaughtered. I wish that to be carefully noted.

3405. Was the fat well set throughout?—Very well set, and that is why I mention the matter of time, having seen her eight days after her slaughter.

3406. What do you consider the importance of that?—I find that in diseased animals the carcasses do not last so long as that in good condition. That is my experience.

3407. Does tuberculous disease in its early stage, and when the sphere of its operation is circumscribed, produce any defect in nutrition and waste in the carcase?—In its very early stages I would say no, as in this case. I am now speaking of the cow.

3408. Did all the muscular tissues of this cow exhibit a fair sprinkling or intermixture of fat?—They did, indeed. That was one of the reasons why I considered she was in a good condition.

3409. And would you consider this animal, with the exception

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May 30, 1889. of the local appearances you have given us, as in any sense of the word a diseased animal?—Not beyond that.

Dr. G. 3410. Not beyond the local lesion?—No.

Goldie. 3411. Now, in your opinion, is there anything in the nature of local tuberculosis such as you saw in that cow to render the flesh of such an animal unfit for human food?—I have no reason to believe that there is.

3411-1. Has it ever been proved by a single case that the flesh of such an animal has been productive of tuberculosis in the human subject?—I have no knowledge of it if it is so.

3412. You never heard of such a case?—I have not, and I never read of it.

3413. Have you read the recent works upon tuberculosis, such as those of Professor Koch, or any of those writers?—I have, but I should not pass any substantial opinion upon them.

3414. But your attention has been directed to the subject for many years?—Yes.

3415. At the same time that you inspected this cow and the bullock also, were Dr. Dougall and Messrs. Mason, Bowman, and Boyle present?—That was on my second examination.

3416. When was the second examination made?—The second examination was made, I believe, on the Tuesday or Wednesday, I am not sure which. I did not go there for my own purpose then; I went to accompany my friends the following day from my first visit.

3417. Did you see anything then to make you alter the opinion you formed, as you have told us now, at your first inspection of the cow?—No.

3418. I think at your first inspection Dr. Francis Imlach, of Liverpool, and Dr. John Dougall, of Glasgow, were present?—Yes.

3419. What about the bullock—tell us what appearances its carcase presented generally?—I saw the carcase of the bullock first, and I may say at once that it appeared to my mind that there must be some mistake. I spoke to the men, and I said, “Are you sure this is the carcase that you require me to examine?” It seemed such a highly-furnished, well-finished bullock, looking at the carcase from behind as I entered the room, that I said, “Are you sure this is the carcase you mean me to examine?” “Oh, yes, this is it.” “Very well,” I said, and I proceeded to examine it; but I must say, with the exception of a little congestion on the internal costal pleuras and a slight congestion of the lung, I saw nothing in the world the matter with it.

3420. *Sheriff Berry*.—Were these two animals alone in this place?—Yes, they were alone. There were four sides, two of each animal.

3421. *Mr. Jameson*.—And they were shown you by the officials in charge?—I presume so; I had an order for admission from Messrs. Colquhoun.

3422. Then, you were to describe to us the general appearance of the bullock?—Well, with the exception of what I have men-

tioned and a few adhesions, small pleuritic adhesions, I saw nothing wrong with it. I did not find a single tubercular deposit there, and I was specially requested to look for them.

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3423. And how would you describe the flesh of the bullock?—The flesh of the bullock I think no one could doubt was in excellent condition.

3424. Was it a high class quality of meat?—A very high class quality of meat, about two and a half years old bullock. A very first-class bullock I should take it, and in high class condition.

3425. If that bullock had been submitted to you for inspection at Leeds, would you have passed it?—Yes; I should have thought it was probably a joke if they had done that to me in Leeds.

3426. You would have passed it without any hesitation?—Yes, I say that unhesitatingly.

3427. Now, what is your practice in Leeds with regard to animals affected locally with tuberculosis, such as the cow?—I should have removed all the affected parts and passed the carcase.

3428. You would perform the operation which is known as stripping?—Yes, what is called in Yorkshire “rhyning,” that is stripping the serous membranes from their attachments where disease exists.

3429. You have seen that done often?—Hundreds of times.

3430. Is that done mostly with the hand?—It is done by simply nicking across the serous membrane, tearing it down, and it will come away wholesale. You can do it with care and strip it all.

3431. You don't use the knife. You use the knife to make the incision or the cut across, but do you use the knife for separating the serous membrane from the flesh to which it is adhering?—It is not necessary generally. It comes off quite easily in the condition in which I saw that cow.

3432. Is it generally pulled off with the hand?—Yes, I have pulled many a thousand off.

3433. And if that is done, do you think there is any danger? Supposing there are infectious matters in the inner side of the membrane, do you think that there is any danger of them getting off and adhering to the sound flesh behind, so as to render it unfit for human food?—No, I have not found it so.

3434. When you meet with an animal that is generally affected with tuberculosis, and in which any of the organs are very badly affected with it, do you reject it?—Yes.

3435. And is the flesh of such animals generally soft and watery?—Yes; you generally find an emaciated carcase,—that is to say, they suffer from the effects of the disease, and are reduced in character and quality, and thin.

3436. Then, if you find emaciation, combined with local tuberculosis, you reject the animal?—I would indeed.

3437. But there was no such emaciation in this cow as would have made you reject it?—No, I saw no concomitant signs but the one. If I had I would have distinctly said that my opinion was against passing it.

3438. Because you would have considered that the emaciation

May 30, 1889. betokened this, that the disease had affected the whole constitution of the animal?—That is so.

Dr. G. 3439. Whereas if you found only local symptoms of tuberculosis and no emaciation, you would infer that it had been confined to the locality where you saw it?—Yes.

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3440. And so far as you know, has that mode of dealing with cattle been found absolutely safe in practice in Leeds?—In Leeds, certainly. I should like to make a remark with regard to a question that was put to me about whether I found my practice was safe. In connection with that I would say that I have got up carefully the statistics of deaths from phthisis during the last ten years in my burgh, the population of which for the first half of the present year was estimated by the Registrar General at 351,449, with an enormous area. It is well that I should put that in, because my meat inspection is not so simple as it is in Glasgow. I have about 300 slaughter yards in my burgh, and they are scattered over an area of 33 square miles; therefore the inspection of my town requires a tremendous amount of labour to get over the ground; but I have collected the deaths for the last ten years, and I find that with a population, in 1879, 56,000 less than the estimated population of Leeds in 1888, I had 626 deaths from pulmonary phthisis, whereas, in 1888, the number of deaths from that cause was 550.

Cross-examined by *Mr. Ure.*

3441. I understand that you do not tender yourself as a specialist on pathology or histology?—I do not.

3442. And I understand that you have made no special investigations on that subject yourself?—No.

3443. I suppose you have paid some attention to the matter?—Yes.

3444. Will you mention those whom you regard as authorities on the subject?—I have some authorities here. I consider that the Berlin Congress is a very fair authority, for instance.

3445. Do you attach any importance to the investigations of Koch or Klein?—I would not like to say too much about that. I am not prepared to follow them.

3446. Perhaps you would mention whom you regard as higher authorities, whom you would be prepared to follow?—I should say Burdon-Sanderson is as good an authority as anybody I know.

3447. Are you able to give me a reference to any recorded opinion of Burdon-Sanderson upon this topic that we are investigating?—No, I could not for the moment lay my hand upon it.

3448. May I take it that you reject the conclusion come to by the Paris Congress in 1888?—No, I have looked carefully over that, but I am not quite sure whether the Paris Congress would not have passed these two carcasses.

3449. Are you familiar with the report?—I have read it, but I do not have it before me.

3450. It says: "Further, although the bacilli may be found " but rarely in the flesh, still the chance of their being present

“ either there or in the blood is too probable to ever allow of the
“ flesh of a tubercular animal being used for food under any
“ circumstances, either for man or the lower animals.” Do you
admit or reject that?—I reject it in this respect that I find that
you have the words “ probable, possible, or suggestion.” I have
no doubt that my town is largely fed on tuberculous meat.

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3451. I mentioned the Paris Congress, instead of the report of
the Committee; are you familiar with that document?—I have
read it.

3452. Be good enough to consider my question as applying to
the report of the Commission and not to the Paris Congress; do
you reject the conclusion in the 46th paragraph, or do you not?
—Yes, it is too probable; there is no finding in it.

3453. Do you reject or accept it?—I do not accept proba-
bilities.

3454. You reject 46?—I do not accept it.

3455. You do not accept it?—No; I am not bound to accept it.

3456. Are you familiar with the resolution which was passed
by the Paris Congress on 31st July, 1888?—Yes.

3457. May I take it that you reject the conclusion arrived at
by them?—I do not reject it.

3458. You accept the conclusion?—I don't accept it exactly.

3459. Do you accept or reject it?—I reject it; I have no proof.

3460. Are you familiar with the decree issued by the French
Government on 28th July, 1888, with reference to tuberculosis?—
Yes. I thought that was what you alluded to.

3461. Have you the resolution before you?—No, I have not.

3462. Be good enough to look at the third article of the decree
of 28th July, 1888, and say whether you accept or reject it; do
you reject it?—Not exactly.

3463. If you accept it under modification or qualification, be
good enough to say so?—I accept it in this respect that lesions
are generalised, not confined exclusively to the visceral organs
and the lymphatic glands. That is sub-section 1 of No. 3.

3464. Will you proceed?—“ And if the lesions, although
“ localised, have invaded the greater part of an organ.” In this
case it had not invaded the greater part of an organ. “ Or are
“ manifested by an eruption on the walls of the chest or of the
“ abdominal cavity.” There is no eruption on the walls of the
chest here or of the abdominal cavity.

3465. Do you reject or accept it?—I must confess that a good
many of my friends are perfectly unable to analyse that sentence.

3466. Do you accept or reject it?—I neither accept nor reject
it; I think it is a most inconsistent resolution.

3467. You don't understand it?—No, and I think very few
will. I have not been without consultation on this very point.

3468. Do you refer to any other authority as against those
that I have brought under your notice, except Sanderson?—I
have a work here upon the question of diagnosis, and I was very
much struck with the fact that a gentleman whom most men in
my profession know is an authority, Dr. Hertwig of Berlin. I
have taken his authority, and it is a very good one, I believe;

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and you will find a statement made by him as to the number of cattle that have been seized with tuberculosis, and you will find also the number of carcasses passed out of these tuberculous cattle.

3469. Do you refer to any other authority?—I refer to this one, Dr. Hertwig of Berlin.

3470. And to Sanderson. Do you know Dr. Fleming, the principal veterinary surgeon in the army?—I do, very well.

3471. Do you regard him as an authority?—Oh, yes.

3472. And if he stated that an animal affected with tuberculosis should have its whole carcass condemned, would you be prepared to follow his authority or not?—I don't follow that.

3473. You reject that statement?—No, I simply do not follow that at all.

3474. Now, do I understand you to say that you yourself inspect the 900 cattle and 4500 sheep a week?—Yes, I go through the market.

3475. Have you no assistance?—Yes; you could hardly expect me to do that without assistance.

3476. About those figures for a moment, they struck me as being rather heroic—that is, 5400 head of cattle?—Cattle and sheep.

3477. I suppose you are at it for six days?—No, every Wednesday; that is one day.

3478. In one day you manage it?—Yes. We have not markets every day in the week, I am happy to say.

3479. How many hours in one day do you take to inspect 5400 head?—About three or four hours.

3480. Then we can calculate for ourselves the time that you devote to each carcass?—Yes.

3481. As to the cow, do I understand you to say that all you found wrong with the cow was some caseous masses in the pleura?—I did not say that.

3482. And on the lungs?—I said in the lungs and nodulated masses on the pleural membrane.

3483. Do these caseous masses indicate that the disease has been chronic or not?—Not necessarily so.

3484. Did you regard the case of the cow as one of chronic or acute tuberculosis?—I considered that it was in a stage of arrest, as I have seen hundreds of the kind.

3485. Was the cow when slaughtered, in your opinion, suffering from tuberculosis or not?—I cannot tell when she was slaughtered, but from the appearance, I should say she had.

3486. You take the view that when she was slaughtered, she was suffering from tuberculosis?—I should say so.

3487. Was it chronic or acute?—I would not try to answer that.

3488. Do you not know that when caseous masses or tubercles are found, that indicates that the disease has become chronic?—No; it indicates that it has passed from the acute to the secondary stage. The appearance of these caseous deposits in

the bases of both lungs indicates to my mind that this disease was in the secondary stage of tuberculosis, according to Fleming.

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3489. Did you cut into any of the glands of the cow?—I examined every mesenteric gland of the cow; that is to say, I examined carefully the mesenteric glands.

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3490. And cut them up?—Yes.

3491. Did you find any tubercle in what you cut up?—No.

3492. Did you examine the glands?—No; I don't know that I did, microscopically.

3493. Is your view this, that if the tubercle is only seen upon the pleura, or upon the lungs, or internal organs, the rest of the carcase may be used for food, if the portion affected is cut away?—No, that wants to be put in a matter of degree.

3494. In what condition would you say that the carcase must be before being condemned whole?—If I had examined a carcase with the disease localised as in this case, but with a suppurative abscess, as I have seen in some of them, I would always have cut it down, and given notice to the owner to appear before the magistrates to show cause why it should not be condemned.

3495. If you found the rest of the flesh absolutely sound to all appearance, but the tubercles and the organs in a suppurative way and breaking down, would you have condemned it?—Yes, I would give the public the benefit of the doubt.

3496. Why would the animal not be safe if you cut it away?—Because I have a strong suspicion that the disease had become systemic and passed through the system.

3497. If you found the virus of the disease in any of the lymphatic glands, would that affect your view at all?—Yes, certainly.

3498. Why so?—I consider that if the animal is suffering from localised tuberculosis, and I find that from an examination of the localised tuberculosis the glands have become affected or broken down and tuberculosed, I would say that is very much like a systemic poison.

3499. And I understand you would have condemned this animal according to the practice at Leeds if you had found in the inguinal glands any evidence of the presence of the virus?—Yes.

3500. I suppose you don't tender yourself as an expert upon tuberculosis and the tubercle?—No.

3501. With regard to the bullock, do I understand you to say that you found no trace of any kind of disease in the bullock?—No, I do not say so.

3502. What trace of disease did you find?—I described it as carefully as I could. One was pleuritic adhesions of a very simple character.

3503. In your opinion was the bullock when killed suffering from tuberculosis?—No, nor any piece of the carcase when I saw it.

3504. Not at any stage?—I saw no tubercles about it.

3505. To what did you attribute the indications you saw?—I gave an account of it. I will tell you what I said on the spot as to the cause of these morbid changes.

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3506. Did you regard it as indicative of any disease at all?—Any departure from health is indicative of a disease, and I set myself to think what was the cause.

3507. What was the disease?—It was simply and purely pleuritic inflammation of a very simple character.

3508. And in your view had nothing to do with tuberculosis?—That is so.

3509. I suppose I may take it with reference to the bullock as with reference to the cow, that if you had seen in the glands evidence of the virus in the mesenteric glands you would have condemned the animal?—Yes, but I never expected to see it.

Adjourned till to-morrow at 10.30 a.m.

Friday, 31st May, 1889.

EVIDENCE FOR RESPONDENTS—*continued.*

Dr. FRANCIS IMLACH, *sworn*, examined by *Mr. McKernie.*

Dr. F.
Imlach.

3510. Are you a doctor of medicine of the University of Edinburgh?—I am.

3511. Where are you practising?—In Liverpool.

3512. You took your degree in 1872?—I did.

3513. Have you been practising since then?—I have been in practice since then.

3514. Have you a large practice?—I have a large consulting practice.

3515. Were you asked by the agents in this case to go and see the two carcasses that have been seized by the authorities?—Yes; I was requested to come up to Glasgow and see the carcasses, and I did so.

3516. When did you see them?—I saw them on the 16th of this month.

3517. I will ask you about the condition of the carcasses; take whichever one you please first, and tell us about its condition?—I will take the cow, and then the bullock. I suppose the cow was four or five years old. The unhealthy condition was in both lungs, and, as far as I saw, in the left pleura. At the base of both lungs there was undoubted tuberculosis—a mass in each base about the size of one's closed fist, but these lungs were of ordinary volume.

3518. And of ordinary normal weight?—I did not weigh them, but I should say very little in excess over the ordinary weight. On the left costal pleura I saw a few tubercular nodules. That was all that I saw wrong with the cow.

3519. Did you see any of the internal organs other than the lungs?—Yes; I carefully examined all the organs. I carefully examined the peritoneum.

3520. Did you observe any symptoms of disease other than what you have told us?—None whatever.

3521. May I ask you whether the other organs were all normal and healthy?—All normal and healthy.

3522. What have you to say as to the flesh?—I thought it was a very fair carcase—very good meat. The flesh was firm. The fat was firm, not sodden.

3523. Assuming the animal to have been killed on the 8th, you saw it on the 16th. What did the condition of the flesh on the 16th indicate as to the health of the animal?—That the meat had good staying qualities—that it kept well.

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3524. Would that have happened if the cow had been unhealthy in life?—No; decomposition would have set in early.

3525. And decomposition had not set in?—No, there was no appearance of it.

3526. But it is right to say that the refrigerator had something to do with it?—No doubt.

3527. Can you give any opinion as to whether the flesh of the cow is or was unfit for human food?—In my opinion, it was fit for human food.

3528. Would you have had any objection to take it yourself?—No; I would have eaten it myself.

3529. Did you see anything in the condition of the carcase or in the state of the internal organs or anywhere about the cow to indicate that there was any risk whatever to human life from the eating of the flesh?—No, none. I am aware that it is constantly eaten.

3530. May I ask you, had the cow suffered from tuberculosis?—The cow had suffered from tuberculosis, undoubtedly.

3531. There was no doubt about that?—No doubt whatever.

3532. Can you assign the tuberculosis to any particular character or class?—The degeneration was of a favourable character. It was hard, and the lime salts were in large quantities.

3533. The deposit round the tubercle?—Yes.

3534. What did that indicate as to the stage of the tuberculosis?—It indicated that, in my opinion, you would scarcely look for a general infection from such a case.

3535. Did it indicate anything as to the progress of the disease or the progress of convalescence?—It represented a quiescent stage of the disease.

3536. Does that mean that the disease was not advancing?—Was probably not advancing, or at anyrate very slowly.

3537. Did it probably indicate that it was convalescent at that part at all events?—Yes.

3538. You have heard of generalised tuberculosis?—Yes.

3539. And you have heard of local tuberculosis?—Yes.

3540. Is there any other kind of it but these two?—No; classifying in that manner you would only have general and local.

3541. Was this animal suffering from general or local tuberculosis?—It was suffering from local tuberculosis.

3542. Go to the bullock?—It was apparently about two years old.

3543. Would you describe the internal organs and membranes, beginning with the lungs?—The lungs I examined very carefully. They were sliced in my presence in several places, and I could find no trace of disease whatever.

3544. There were incisions made in the lungs in your presence?—Yes, by one of the men in charge who was present.

3545. Were these incisions made at your request?—Yes.

3546. Then practically they were made by you?—Practically they were made by me.

3547. Why did you make these incisions?—To see if I could find evidence of tubercle,

3548. Describe your opinion of the condition of the lungs from your examination of them after these incisions?—The lungs I considered were perfectly healthy. There might have been some congestion, but I saw no trace of it.

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3549. Could the congestion have disappeared?—A slight congestion might have been unnoticeable.

3550. There might have been slight congestion that had disappeared then?—Yes, but it could not have been a serious congestion or the lungs would not have been in that condition. There was, no doubt, evidence that there had been some pleurisy—some slight inflammation of the pleura on both sides.

3551. Is that the costal pleura?—On the right side. At the base of the left lung there was evidence of a slight adhesion of the pulmonary pleura to the diaphragm.

3552. We have heard the name pleuritis; was the animal suffering from pleuritis at any time?—I should say certainly.

3553. Have you heard of tubercular pleuritis?—Yes.

3554. Was it suffering from that?—Not in my opinion.

3555. Have you anything further to say about the lungs?—No. I took a portion of the pleura and examined it and I found no bacilli.

3556. You took a portion of the right costal pleura home with you?—Yes.

3557. And you examined it carefully for bacilli?—Yes.

3558. You know the bacilli of tuberculosis?—I do.

3559. Whether you believe in them or not, you know about them?—I am familiar with them.

3560. You took a portion of the costal pleura on one side?—On one side.

3561. The appearance on the other side being just the same?—Much the same.

3562. Did you examine it very carefully?—I did examine it very carefully, but I would like to say that one may examine carefully—one often does—and not find bacilli; but in another sample it is possible to find bacilli. I found none.

3563. You did your best, and you found none?—I found none.

3564. Notwithstanding the appearance of the part?—It had no appearance of tubercular pleuritis.

3565. You know the distinction between tubercle and tuberculosis?—I don't know the difference. Tubercle is a nodule, and tuberculosis is a state or condition.

3566. Tuberculosis is applied to the state of the disease?—Yes.

3567. And tubercle is applied to what?—It is a physical condition.

3568. Just as if you were describing small pox; it is what affects the system, but a pustule is a different thing?—Yes.

3569. But the two are accompaniments of each other?—Yes.

3570. Tuberculosis is a general description?—It is.

3571. If we were told by an expert that you may have tubercle without tuberculosis, what do you say to that?—I should not understand it. If he meant that you could have a local tuber-

May 31, 1889. cular process without a general tubercular process, I should agree with him.

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3572. But if you have a tubercle without tuberculosis being in the case, would you agree with him?—It would have no meaning.

3573. And you think he would be talking nonsense?—Yes.

3574. Did you make any other experiments with the lungs?—No.

3575. Were they of normal weight?—Yes; they appeared of normal weight. They were not weighed before me. I should say that the lungs of the cow are a little over weight, but not much compared with what one often sees. I am speaking of the cow.

3576. Of the bullock?—No; they were of normal size.

3577. Did you observe anything abnormal about the pleura of the bullock?—I don't know if I mentioned that on the right side there was lymph.

3578. But thickening?—No; no considerable thickening on either side.

3579. What do you mean by considerable thickening; do you mean appreciable?—Yes; you could not have pleuritis without a little thickening.

3580. There was inflammation, and that caused perceptible thickening?—Yes. If you wanted to see the difference you could, but it was not a readily perceptible difference.

3581. If you were to look out for it you could see it?—Yes.

3582. But otherwise it may have escaped even a skilled eye?—Yes.

3583. Is thickening, and very considerable thickening, a symptom of tuberculosis?—Yes; you get very considerable thickening in tuberculosis.

3584. Give us the extent of it—by how much is the pleura enlarged or thickened?—I have seen it half an inch thick.

3585. What is the normal thickness?—I cannot give you it, but it is very fine. It is more like a sheet of paper.

3586. About the twentieth part of an inch?—Something about that.

3587. Was that in local tuberculosis?—Yes; in the costal pleura; but it does not thicken in the costal pleura as much as in the pericardium round the heart.

3588. Describe the condition of the other organs of the bullock?—They were all perfectly healthy.

3589. You examined them all carefully?—I examined the abdominal viscera with great minuteness.

3590. And all the internal membranes?—Yes.

3591. And the glands?—Yes. I examined the glands, and they seemed all healthy.

3592. Did you observe anything at all wrong with the internal organs of the bullock except what you have told us?—No, nothing.

2593. Did you examine the flesh of the bullock?—Yes, I did.

3594. Give us in your own words what you have to say about that?—It was first-class beef—prime meat.

3595. Was the bullock well nourished?—Yes, in good condition. May 31,
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3596. Was it meat of the kind that would have fetched the best price in the London market?—I should suppose so—I should certainly think so. It was first-class meat. Dr. F.
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3597. Do you know about markets?—I am not familiar with the price of meat.

3598. But you are familiar with the kinds of meat?—I am familiar with examining carcasses.

3599. *Mr Comrie Thomson*.—We admit that this was a prime bullock, apart from the disease.

3600. *Mr. McKechnie*.—The bullock had suffered from no tuberculosis?—From none, in my opinion.

3601. And the cow had suffered from local tuberculosis?—Yes.

3602. In regard to the flesh of the bullock, of course, you could have no hesitation in eating that yourself?—No.

3603. Or giving it to any patient who was consulting you?—Certainly, I would give it to him if I would eat it myself.

3604. Has it ever entered your mind that by any human or inhuman possibility the flesh of that bullock would endanger man?—It has certainly entered my mind, as a very familiar hypothesis, that the flesh of a tuberculous animal might, but not the flesh of this bullock.

3605. When you say as a hypothesis the flesh of tuberculous animals might injure human beings by ingestion, what do you mean?—It is quite a plausible hypothesis.

3606. And a great deal can be said about it?—Yes, and should be said for it.

3607. When you speak of that as a plausible hypothesis, do you speak of animals affected by general tuberculosis or merely local tuberculosis?—Well, I think it is a hypothesis which should be considered, and it has been considered in both ways. My opinion as regards localised tuberculosis is that there is not any evidence whatever that it can cause tubercle; and the only evidence as regards general tuberculosis is that eating the meat may cause illness—diarrhœa, but not the specific tubercle.

3608. Diarrhœa is a chemical process by which the animal economy relieves itself of poison?—A physical process.

3609. So that if a human being should by any accident come across a piece of bad meat at dinner the system would relieve itself of it by that means?—It probably would.

3610. Are you speaking of generalised tuberculosis?—Yes, miliary generalised tuberculosis.

3611. In the case of animals affected with local tuberculosis, how would you deal with the carcass?—I think each individual case must be judged by itself.

3612. It is a matter of degree?—Yes.

3613. If you were there, and came to the conclusion that it was local tuberculosis, and had not advanced very far, and had affected only the lungs or the costal pleura, what would you have done as to the condemnation of the carcass?—Where the

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 Dr. F. Imlach. flesh is good, and the tubercle entirely localised, I think it should be passed as fit for human food; but in an advanced stage, even where it remains local, when the animal gets off its flesh and when the carcase does not properly set, and gets thin and watery and sodden, then I think it should be condemned.

3614. That is to say, although the appearances are only local? —Though the appearances are only local.

3615. The nutrition may not be going on?—Yes.

3616. And the eye of a skilled inspector is equal to the occasion?—These are the cases he can detect during life.

3617. Would an inspector in a slaughter-house, or a skilled officer of health, see it?—He would see it at once.

3618. And would he have any difficulty in saying it was to be condemned, or it was not?—I think not.

3619. Do I understand you to say that, even in the cases where tuberculosis is generalised, the flesh would not affect the human system to the extent of giving tuberculosis to man?—I am not aware that there is any satisfactory evidence that it would give the specific disease by ingestion.

3620. But you are not aware of any evidence—is there any evidence?—None; and I have studied the matter.

3621. There is a great deal of floating opinion upon it?—Yes; it is the subject of much discussion in the medical world just now.

3622. And I suppose one man adopts another man's opinion, and tries to explain it in his own way?—Yes, largely.

3623. Do you know of any experiments made in Great Britain or Ireland on this question, whether the ingestion of food from tuberculosed animals into the human stomach has ever caused tuberculosis, or can cause it?—No, I am aware of none.

3624. If any had been made, would you have heard of it?—Yes, I would be certain to hear, because I am interested in the subject.

3625. You have been paying special attention to this subject for about six years?—Yes, since 1883 experimentally.

3626. Have you made experiments yourself upon animals with milk?—Yes.

3627. How was it that you came to make those experiments?—I was interested in the subject of tubercle amongst children—*tabes mesenterica* and the general subject of *phthisis*, and also I read an article by Professor Fleming, of great interest to me.

3628. Is that the gentleman whose book we have here?—Yes.

3629. He is the army veterinary surgeon?—Yes.

3630. Did you make experiments at the instance of the British Medical Association, or did they give you a grant?—I put the matter before them, and they willingly gave me a grant, admitting the general importance of the subject.

3631. Is the British Medical Association a body representative of the profession in Great Britain and Ireland?—Yes.

3632. You got a grant from them in order to make those experiments?—Yes.

3633. When did you make those experiments?—I began in the beginning of 1883, and they occupied me largely during the whole year—about twelve months.

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3634. Describe them.—I got the chief inspector of Liverpool to go round with me and the chief veterinary authority, and we selected advanced cases of tubercle. We took three cows—first one and then another, and then a third, which were far advanced.

3635. So as to get tubercular matter?—I made a point that the udder was not diseased.

3636. Were these all cases of cows?—Three dairy cows from the Liverpool dairies.

3637. All affected with tuberculosis, but not reaching the stage at which the udder was diseased?—Yes. I fed some calves, a young goat, guinea pigs, monkeys, and pigs, on the milk. I found no evidence whatever. I was quite surprised to find that none of them died except two of the monkeys. They died of tubercle, but monkeys always die of tubercle.

3638. *Sheriff Berry*.—To what extent did you feed these animals with this milk?—Every day for a couple of months. I kept them some months before I killed them.

3639. *Mr. M'Kechnie*.—Had you two monkeys?—I think there were three, but only two were fed on the milk.

3640. How long did they live after you began to give them this milk?—Four and five months.

3641. The three of them?—Yes.

3642. Then about the guinea pigs?—I found no evidence whatever. I found that I could not produce a tubercle in a single case.

3643. Did the three monkeys die of tuberculosis?—Yes, but they always die of tubercle.

3644. In what period did they die of tuberculosis?—I think it was five months.

3645. Then the goat?—The goat was none the worse, and the pigs were in splendid condition. The butcher said they would get a prize at any show. I sent them out to a farm in the country after I had fed them in that way, and they fattened, and many months afterwards they were killed, and they were prime and fat, and had nothing wrong with them.

3646. What about the calves?—One calf died.

3647. How many were there of them?—I think there were three or four calves.

3648-9. What came of the others?—They lived with the others and thrived and were killed and sold, and there was no appearance of tubercle. The calf that died had no tubercle in the *post-mortem* examination. That was purely a negative result, and I entered into the investigation fully thinking I would find the contrary.

3650. What conclusion did you come to as to the result of this experiment?—That we need not have any apprehension about the milk of tuberculous animals so long as they were in good condition.

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3651. Describe the kind of milk that you were getting from these cows.—It was very poor milk. The cow in the advanced stage fell off its milk. In the early stage the milk is good, and rich and plentiful so that you cannot tell, but in the advanced stage the milk falls off in quantity, and there is less cream—about half the quantity of cream.

3652. The milk was decidedly poor milk?—Yes.

3653. And deficient in cream?—Yes.

3654. Do you remember giving evidence, about three years ago, before the Birkenhead magistrate in an inquiry like this?—It was an inquiry as to whether a carcase was fit for human consumption.

3655. What was stated to be wrong with the animal?—It was a Canadian cow, and it was alleged to be a case of splenic fever.

3656. And, therefore, the flesh was unfit for human food?—Yes.

3657. That was the case for the prosecution?—Yes.

3658. Did you give evidence for the defence?—Yes.

3659. Was it established that the animal had suffered from splenic fever?—No; it was established that it was an overdriven animal getting from the ship. The meat was sound, and there was no appearance of fever.

3660. What were the internal appearances in the case?—Some congestion of the spleen was the main thing that we noticed.

3661. No congestion of the lungs?—There was a slight congestion of the lungs, but mainly of the spleen.

3662. Has your attention been called to an answer given by Professor McCall to the Privy Council Commissioners?—Yes.

3663. At p. 132, question 4248, he says there—"I have a specimen of the effect on the muscles and bones. (The witness here showed parts of the sirloin of a shorthorn bullock in which, with the naked eye, tubercles could be seen in the fibres of the flesh round a tubercular abscess, and within the marrow of the bones.)" What have you to say to that case?—I say it is a very interesting and rare case, but it has very little to do with the tubercle in the lung and the consumption of the flesh of such animals.

3664. What do you understand the description to indicate as to what the condition of the animal was?—I should say it was a scrofulous animal.

3665. We have been told that scrofula and tuberculosis are identical; what do you say as to that?—There is a similarity in that you find the bacillus in both, but the clinical history of the two conditions has always been considered by the medical profession to be quite distinct.

3666. Have they been regarded as separate diseases?—Yes.

3667. Distinct diseases?—Yes.

3668. There is a bacillus as concomitant to both?—Yes, but it is infrequent in the scrofulous condition.

3669. Has the bacillus of scrofula been isolated yet by anybody?—Yes.

3670. And is it the same as the other one?—I consider it as quite similar to the bacillus of tuberculosis.

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3671. Scrofula goes under the name of struma?—Yes.

3672. Is struma a thing that is very frequently inherited from unhealthy ancestors?—There is an unhealthy family history.

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3673. And struma may be the result of a specific disease which is not tuberculosis—one may inherit a strumous condition of body?—Yes.

3674. We need not mention any particular disease, but that is so?—Yes.

3675. Do you say that struma is inherited?—It is a weak condition that is inherited, which, when a certain age is reached, is very frequently associated with strumous disease.

3676. Tuberculosis, we know, specially affects the lungs?—Yes.

3677. It may affect other internal organs?—Yes, but the lung is the most frequent.

3678. What is the most frequent part that struma affects?—The bones, the lymphatic glands, and the joints.

3679. Does that lead you to come to any conclusion as to whether Professor M'Call's famous sirloin had anything to do with tuberculosis at all?—Nothing to do with tuberculosis.

3680. Nothing in the world. Look at paragraphs 45 and 46 of the report. Have you read the blue book?—Yes.

3681. You see that the Privy Council say there at paragraph 45,—“Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.” Have you found any evidence in the blue book to justify that?—I don't think there is a particle of evidence if you leave out the sirloin.

3682. If you leave out Professor M'Call's sirloin, and that you regard as no evidence?—That I regard as no evidence.

3683. Do you agree with that conclusion expressed in paragraph 45?—No, I do not. I deny entirely that you find bacilli in the muscle.

3684. It is said that cooking is often insufficient to destroy the bacilli buried in the interior of the limbs—is there any scientific evidence as to that?—I think if you buried them and then roasted the meat, you would very likely not kill them, but you would need to bury them there first.

3685. *Sheriff Berry*.—Could they be destroyed?—Thorough cooking would destroy them.

3686. However buried they were?—Yes.

3687. *Mr. McKechnie*.—What do you mean by saying “but you would need to bury them there first?”—I mean that I have looked frequently for bacilli in the flesh of tuberculosed animals and I have never found them, and there is no evidence that they have been found in man. I mean that if meat was roasted it might not kill them.

3688. What do you understand by the expression “in the interior of the limbs”—is that in the marrow inside the bones?—I did not write the report, and I cannot tell you. I suppose it

May 31, 1889. means the flesh, because it speaks of the flesh in the first half of the sentence. It might mean the marrow.

Dr. F. 3689. Assume that it means the interior of the muscles, have you ever found bacilli of tuberculosis in the flesh of animals?—
Imlach. No; I never found an independent deposit in muscle or in flesh.

3690. Have you often examined for that?—Frequently.

3691. And always unsuccessfully?—Yes, and it is not known.

3692. You have examined animals, one of whose internal organs suffered from tuberculosis?—I examined these three cows most minutely.

3693. And they were undoubtedly tuberculosed?—Yes.

3694. And nothing wrong with their flesh?—Except that it was watery and certainly unfit for eating, but as far as bacilli were concerned I found none.

3695. Look at paragraph 46,—“Further, although the bacilli “may be found but rarely in the flesh, still the chance of their “being present either there or in the blood is too probable to ever “allow of the flesh of a tubercular animal being used for food “under any circumstances, either for man or the lower animals.” Have you found in the blue book any evidence to support that conclusion?—It is almost a repetition of paragraph 45. I don’t agree with it, and there is nothing in the report that supports it.

3696. I suppose you mean in the evidence in the blue book?—Yes.

3697. Your attention was called to those paragraphs; you are not reading them for the first time?—No; I have read them before.

3698. And you are giving your evidence advisedly upon them?—Yes.

3699. And after due deliberation?—Yes.

3700. What would you say yourself as to those two paragraphs, 45 and 46—you have told me that there is nothing in the blue book to support them—what is your own opinion upon the statements there set forward?—I think it is only presenting a hypothesis that we have been familiar with since 1874.

3701. It presents a theory?—Yes.

3702. Which is unsupported by facts and unwarranted by evidence?—Yes.

3703. Do you mean a theory started since 1874?—It was known to the profession in England as a theory since 1874 when Professor Fleming introduced the subject first.

3704. Have you believed the theory?—I thought it was very plausible, but I have given up the opinion entirely.

3705. You think the theory is a wrong one?—I think it is not supported by facts.

3706. As to the theory of ingestion by food, you did believe that at one time?—Yes.

3707. But from your experiments and observation you have seen reason to give it up?—Yes.

3708. And on reading and reflection?—Yes.

3709. There were men who were sceptics at first who have

changed their minds the other way?—Yes. That was only accepting the theory; they have not had time yet to give it up.

3710. Those men who accepted the theory only about the 26th of April have not had time to give it up?—No.

3711. But you expect better things of them. Do you know the practice in the Liverpool slaughter-house?—Yes, I am very familiar with the practice there.

3712. What is the practice there as to dealing with the flesh of animals that have suffered from tuberculosis?—They judge each individual case. If it is a case of localised tuberculosis and if the flesh is in good condition, such as the flesh, as I think is generally admitted, of the carcasses here, they pass it, but if the flesh is thin and does not set properly, and the animal is out of condition, they condemn it.

3713. Do you know any town in England where they condemn the carcase *in toto* if they find any trace of tuberculosis?—No; I am not aware of any.

3714. Do you know whether this bacillus is an animal or a vegetable?—A vegetable.

3715. Have you ever seen the spores?—We are bound to believe that it has spores, and we see a condition which I think is taken as a spore condition. We cannot see an individual spore, but we see in the bacillus those indications that I think are fairly to be considered as the condition of spore.

3716. It is an inference that it must have spores?—It is not only that; the inference is carried out. You see a condition of the bacillus that is reasonably considered to be the condition of spore.

3717. We find from the report of the Commissioners that this bacillus will die after several weeks' exposure to a temperature of 107.5° Fahr.; do you agree with that?—I cannot say; I have no personal knowledge.

3718. You have no reason to doubt that that is correct?—Under what conditions?

3719. They don't give the conditions?—It would not die at 107° in a man; it would be very lively at 107° in an animal.

3720. Even if a bacillus were present, would not cooking of the flesh and the action of the human system upon it after eating tend to destroy it?—Yes, I believe so.

3721. It would have a very hard time to go through all that?—Yes, I think so in a healthy man.

Cross-examined by *Mr. Comrie Thomson*.

3722. You mentioned that your practice was mainly consulting?—Yes.

3723. Are you a specialist?—I am a specialist.

3724. In what?—In gynecology.

3725. The diseases of women?—Yes, but when I took up this subject at first I was in general practice.

3726. For how many years have you been mainly a specialist?—Since about 1885.

3727. And before that were you in general practice?—I was.

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3728. As to the cow, I understand it would be correct, would it not, to describe it as having in the lung an abundance of tubercular matter?—There was, as I said, about the size of the fist, but that is very much less than what you frequently find.

3729. What is the size of the lung in comparison to the fist?—It is very much bigger.

3730. Twice or three times?—Eight or ten, or fifteen times perhaps.

3731. To the extent of about one-eighth there was tuberculous matter?—No, I don't think there was so much—one-tenth or one-twelfth.

3732. Was it in a softening condition?—No, but I think this ought to be said that in those lungs the bronchial tubes were dilated. They frequently dilate.

3733. That may be perfectly true, but it has nothing to do with the question—was the tubercular stuff in a softening condition?—No; it was hard, caseous.

3734. It was both caseous and approaching a chalky condition?—Yes.

3735. Could you judge whether it had been of long standing?—I should not think it far advanced.

3736. Would you call it acute or chronic?—I should like a definition of acute and chronic.

3737. I am not going to give you one, because they are perfectly well known medical terms?—Taking acute as I do as conveying an idea of fever, I would say it was not acute.

3738. In the sense that there was not any febrile action?—No febrile action.

3739. Was it acute or chronic?—I think it was chronic as opposed to acute or febrile.

3740. We have had more than one witness with reference to the bullock saying that in the lung of the bullock there was found a small tubercular mass about the size of a small horse bean, and one witness told us that he also found a tubercular nodule about the same size surrounding a vein; I suppose that that evidence is not inconsistent with the result of your examination of the lung of the bullock?—No, it is not inconsistent at all. I did not see it; that is all.

3741. Assuming that that was the case, then you had the tubercular action set up in the lung of the bullock?—Yes.

3742. You said, I think, with reference to the cow, that the disease was advancing very slowly?—I don't think I said so.

3743. I noted it down, and I underscored it; you said that it was progressing very slowly?—I don't know; it would be a slow progress if there was any.

3744. But a slow progress is often a sure progress; it was progressing, and would probably have progressed, and would have killed it in the long run?—Probably.

3745. That is quite sufficient. You told my friend that the bullock was suffering from pleuritis?—Yes.

3746. That is inflammation of the pleura?—Yes.

3747. And it may be caused in more ways than one?—Yes.

3748. May it be caused by tubercles in the pleura?—Yes, I think so. May 31,
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3749. If you had the pleura of this animal tubercular, and if the presence of tubercular nodules was established, and you found inflammation, would you not naturally connect the two things together?—Yes, certainly. Dr. F.
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3750. Quite right. I think you removed a portion of the lung of the bullock or of the cow?—The pleura of the bullock.

3751. For microscopic examination?—Yes.

3752. What did you look for when you put it under the microscope?—For bacilli.

3753-4. Why did you look for bacilli?—Well, because there was a dispute. The animals had been seized as tubercular, I understood.

3755. Quite so; you wanted to satisfy yourself if they were tubercular or not?—That was not my main object. It was to see whether they were fit for human food or not.

3756. That is the second stage; you were told that there was a dispute as to whether they were fit for human food, and that the allegation of unfitness rested upon this, that they were tubercular?—Yes.

3757. Having put that under the microscope, you wanted to find out whether the allegation was well founded or not, and you proceeded to look for bacilli?—Yes.

3758. Why, in endeavouring to settle the question whether there was tubercle or not, did you look for bacilli?—I looked for the bacilli, because I know of myself that the bacillus is an excellent index of tuberculosis—the best index we have got.

3759. I should like to put it quite frankly to you, that you are of opinion that tuberculosis is the result of a specific organism?—At present, I entertain that opinion, but I don't think the final word has been said about the matter.

3760. You hold that opinion at present, but you think that the last word has not been said?—Yes.

3761. Now, let us assume that that is your belief at present, although you are open to conviction; there has been a good deal of experimentalising and research made upon this bacillus during the last seven or eight years?—A great deal.

3762. Do you accept it, that the bacillus is a creature which not merely has the power of propagating itself, but which is capable of being carried through the body, by the lymph stream, let me say, or by the blood stream, from one part of the body to the other?—We can trace its progress through the lymph stream, because we find it in the glands. We cannot trace it in the blood.

3763. It has the power apparently, or in some way contrives to get outside the membrane in which it is enclosed?—It appears to do so.

3764. So that we may take it, without going too minutely into it, that the creature is conveyed from one portion of the body to another?—I think we may hold in the meantime that it can be carried, say, from the pleural covering of the lung to the pleural covering of the ribs.

May 31, 1889. 3765. Would you let it go further afield than that?—We appear to have evidence that with the scrofulous joints, it may affect the lymphatic glands. One chain may become affected from another.

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3766. Supposing you were informed that anyone of these animals, that in the cow in question bacilli were found in the inguinal gland, and in the bullock they were found in the prepectoral gland, would that indicate to you that they had been carried from some part of the system to those localities?—If I found the inguinal glands in the cow enlarged, I should say it was a case of scrofula.

3767. By either name it sounds as nasty; the bacillus of scrofula and the bacillus of tuberculosis are identical?—Apparently, but the clinical history of the two conditions is entirely distinct.

3768. The two bacilli are identical?—Apparently so.

3769. I have told you to assume that the bacilli of tuberculosis or of scrofula were found in the inguinal gland of the cow, and that one had a great lot of them—let us assume, in the lungs and pleura of the cow; does that not indicate to you that the bacilli had travelled or had been conveyed there?—I should probably believe that, but I did not see the inguinal glands.

3770. But I am asking you to assume it, and I will take the responsibility of the truth on my own shoulders, and you will give me an answer. Did you see the prepectoral gland?—I don't know what it is.

3771. I never met it till the day before yesterday, but it was described as a gland in the front of the chest?—If it is inside the chest, of course there are bronchial glands inside the thorax that may be affected with the lungs.

3772. Partly inside and partly outside the chest, and under the clavicle?—If it is a chain in the neck then I should include it as a case of scrofula or struma.

3773. You would call it that, but it would be the same bacillus?—Yes, apparently the same, if you found any.

3774. My friend asked you to distinguish between tubercle and tuberculosis and I noted your answer, which was that tuberculosis was a condition; the term "tubercle" may be applied, I suppose, to almost any morbid excrescence of the body?—It might be, but it would not be correct to say it was tubercle. No medical man would call any lump a tubercle.

3775. Is there tubercle in other diseases than tuberculosis?—They talk of tubercular leprosy.

3776. Is there a tubercle in glanders?—I am not sufficiently a veterinary surgeon to tell that.

3777. You are not a veterinary surgeon; you confine yourself to the ladies. Is tuberculosis a specific disease produced by a specific organism?—We are bound to assume that. I am bound to accept it.

3778. In the examination of the portion of the animal that you subjected to microscopic examination, did you look for any other

histological evidence besides that of the bacilli?—No; if you look for the bacilli you don't get a good opportunity of looking for other organisms, because the staining required to find bacilli destroys the appearance. I did not make an ordinary examination.

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3779. You did not look for giant cells?—No.

3780. You are aware that they are a characteristic or a feature of tuberculosis?—I am aware that they are found in tuberculosis, and they are found in other conditions.

3781. But you confined yourself to the search for bacilli?—Yes.

3782. And you made no further histological research?—No.

3783. You examined the glands of these animals?—Yes.

3784. And found them healthy?—Yes.

3785. Why did you examine the glands?—Because it would have been possible to find them unhealthy.

3786. You thought that if this was tuberculosis it might have spread to the glands?—It might have been in the mesenteric glands.

3787. It might have spread to the glands of the body—that is its nature?—It is sometimes in the mesenteric glands.

3788. And it may spread to any glands?—No, there is no tendency whatever.

3789. Why not; are not the glands connected as a chain, one with another?—If you get the disease in the lungs you never will get them in the inguinal glands.

3790. But suppose people saw them?—Well, I have not seen them, and I have examined a great many.

3791. How many?—A great many hundreds.

3792. But you have already granted to me that the organism which produces tuberculosis is carried by the lymph stream—the lymph stream goes, I presume, from one group of lymphatic glands to the other?—Yes.

3793. And I have no doubt you are telling me what is absolutely true that you have never seen them in the other glands, but if the lymphatic stream can take them to the glands that you have seen, is there anything to prevent them going to the glands that you have not seen?—I did not find them. When the inguinal glands are diseased I would find the lungs diseased.

3794. And *vice versa*?—No, and not *vice versa*.

3795. Why?—I don't know why. It does not happen.

3796. Supposing other observers have seen them, what do you say?—I don't think you will find any observer who will say that he has seen tubercle from the lung extending to the glands of the limbs, either in man or the ox or cow, but *vice versa* they do from the external glands.

3797. Except the mesenteric glands?—They will extend to the mesenteric glands, but not to the lymphatic glands of the limbs.

3798. Here is what Koch says, p. 96, "Direct observation also seems to show that in the first place the tubercle bacilli are seized upon and carried away by wandering cells," and "It is hardly possible to find any other explanation of these cells

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“than that they are wandering cells, which have seized upon the bacilli in the circulating blood, and carried them away to the neighbouring tissue”?—I think that after you read the book, you will entirely agree with me, that if you inoculate a guinea pig in the leg the inguinal glands will become tuberculosed, and then the lungs and liver and the mesenteric glands.

3799. These are all vital parts?—If you inoculate the guinea pig in the hind leg it will not spread to the fore leg.

3800. The nature of the creature is to find congenial soil?—Yes.

3801. And it finds it in the lungs and the liver and the mesentery?—Yes.

3802. Koch says on p. 111—“The development of a single tubercular focus following the course of chronic phthisis may be complicated in various ways, if the tubercle-bacilli escape in any manner from the original tubercular area into other parts, and cause there the development of secondary foci. This may take place in different ways. The bacilli may reach the interior of the larger blood vessels and be disseminated by means of the circulation in larger or smaller numbers throughout the body, with miliary tuberculosis as the result. The bacilli spread apparently also by way of lymphatics, thus reaching the bronchial glands, and setting up secondary tubercular changes in them. But far the most frequent mode in which the bacilli reach and establish themselves in other parts is by passing from cavities into the air-passages. Then they very often take up their abode in other parts of the air-passages, preferably in the larynx. If the sputum is swallowed they may attack the intestinal canal?”—This is a description of general tuberculosis, and that I will admit. I am speaking of while the condition remains chronic.

3803. But localised tuberculosis may develop into generalised tuberculosis?—Yes, with fever.

3804. Is not that the way it does it?—I accept your statement that you find it in the viscera, in the lungs, and liver, and the tendency is for them to become tuberculosed, but not in the limbs.

3805. You grant me this, that the organism is capable of being conveyed to the various glands of the body, although the organs which you have mentioned are those in which the disease generally develops itself?—Yes, I think so.

3806. And the change from localised to generalised tuberculosis is just a dissemination from the original centre throughout the system?—Mainly through the viscera still.

3807. But if you have got your lungs and your intestines in a state of disease, the rest of the body is not likely to be very healthy?—No; it would not be healthy.

3808. I notice that my friend and you consistently used a different expression, as opposed to “generalised.” He spoke of local tuberculosis, and you spoke of localised, and I venture to think that yours is the more accurate expression; do you mean tuberculosis which at the period of observation is confined to a limited space?—Yes.

3809. But that is always susceptible of dissemination, and may pass from the localised condition to the generalised, and will pass unless checked?—No, not at all.

3810. Not necessarily?—Not necessarily.

3811. Can you tell on the living animal whether the process of dissemination has begun or not?—I think there is a great difference. The animal is febrile when there is general tuberculosis, and the temperature rises; the fever rises to 103° or 104°.

3812. It begins in the centre and gradually disseminates itself?—Yes, but it often does not disseminate itself.

3813. It is sometimes checked?—It remains localised very frequently.

3814. I grant you that, but it frequently does not remain localised, and will you grant me this—if you believe that the origin of it is an organism, it is a mere question of accident, as we call it, whether it spreads or not—that is whether the bacillus is conveyed, and whether the obstacles that it meets with in the body are sufficient to overcome it or not—does it depend upon that?—I cannot tell.

3815. But assuming that your belief is well founded, and that the organism is the cause of the tubercle, and that it is capable of being conveyed through the body, is it not a question of chance whether it won't be conveyed through the body, and conveyed through the body to resume its noxious action wherever it finds a congenial soil?—Yes, I think so.

3816. That is quite fair. You said that general tuberculosis would naturally cause what my friend described with elegant periphrasis, which I cannot follow, and the ordinary name of which is diarrhœa—that is, an effort of the body to get quit of a noxious subject?—Yes, it may be described so.

3817. That is my way of describing it; it is not so poetical as my friend's; but if tuberculosis goes on in an ox or a cow, does it generally end in death—first diarrhœa and then death?—Yes, but the diarrhœa I speak of does not end in death, so far as I am acquainted with the subject.

3818. Does not tuberculosis in an ox generally end in death?—Yes, if you give it long enough time.

3819. As to the milk of tuberculous cows, am I right in supposing that that also is a question of degree in your opinion?—I don't think it is a question of degree when the udder is not diseased. I don't think there is any evidence that has satisfied me to show that the milk from an udder that is not diseased can convey the bacillus.

3820. In January, 1881, the knowledge of the profession in regard to bacillus was not so advanced as at the present moment?—No.

3821. Particularly, the bacillus was not discovered at that date?—It was discovered about that time.

3822. In that month the Liverpool Medical Institution had the advantage of listening to a paper by you on the milk supply of that city, and I read to you a passage from the Transactions of the Institution, 1881-82, page 103: "As to the condition of town

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3823. And he is still alive?—Yes.

3824. And at the head of the veterinary department of the army?—Yes.

3825. And you were speaking of him as a high authority?—Yes.

3826. I read you what you said there:—"As to the condition of town cows, I shall give the opinion of Mr. George Fleming, the highest English authority on veterinary pathology—an opinion which, so far as I have been able to learn from observation and from inquiry amongst cow-keepers, is not an unfair one: 'Cattle kept solely for dairy purposes, and particularly in large towns, suffer by far the most severely from this affection (tubercular phthisis.) Constantly confined in stables which are not always well ventilated and clean, deprived of exercise, drained of milk in large quantities, and fed on the kind of aliment which most favours the increase of that fluid, though it may not enhance its quality, it cannot be wondered that the nutritive functions of the cattle so treated must suffer to a serious extent. Indeed, it is a matter of daily observation that the cows which are abundant milkers are most liable to this disease.'—*A Manual of Veterinary Sanitary Science*, vol. ii., p. 370, 1875. That bovine tuberculosis is a very common disease is evident to anyone who has visited the slaughter-houses or shippens of this city. Grapes (as the farmer calls it) must be distinguished from various diseases of the lung, such as bronchitis and bronchiectasis. It commences with intense capillary congestion of the serous membranes and a subsequent formation of villous-like vascular processes, 'like the pile on red velvet.' Finally, leaf-like fringes, button-shaped nodules, and grape-like clusters are formed, constituting the distinctive mark of the disease. Both lungs may be tuberculous, or one may have only œdema or emphysema. The tubercle may be very extensive throughout the lung, and is then calcified or softened in parts. Vomicæ, without apparent communication with bronchi or pleural sacs, with soft cheesy contents and walls of indurated connective tissue, are a distinctive mark of the disease as it affects the lungs. The bronchial and mesenteric glands and the udder are often found to be affected, and it is easy, therefore, to imagine, at least, that the milk may carry the infection to those who drink it. Gerlach (1869) found this to be the case with animals upon which he experimented. A calf fed with tuberculous milk for fifty days was found tuberculous when killed fifty days later; a pig fed for twelve days with this milk, and killed thirty days after, had tuberculous nodules on the pleura and in the lung, and so on. Dr. Creighton in two excellent communications, since published separately, has collected much interesting information from various authors (Gerlach, Trasbot, Fleming, Klebs, Schüppel, Virchow, &c.), and thinks we are

“entitled to go a step further. Depending entirely upon what he terms ‘*the structural mimicry that resides in infection*,’ he claims that ‘the disease communicated to man reproduces the special anatomical characters of the bovine disease with a surprising degree of accuracy.’ He can detect bovine tuberculosis in man by *post-mortem* examination alone. No need to trace back the history, find the cow whose milk had been drunk and prove it to be tuberculous. ‘It is only to the most unbounded faith in the structural mimicry of infection that success in this quest will be given.’ He narrates twelve cases in which he found the characteristic lesions. But when we notice that they all occurred at Addenbrooke’s Hospital, Cambridge, within a period of seven months, and five of them in less than a month, without the supposed cause being traced in a single case, it is evident that the value of this mimicry still requires to be verified by further investigation. With the evidence, however, as it stands, surely it would be a wise precaution not to drink the milk of such animals, and to insist, as a preventative measure, upon the cattle being turned out to grass during at least a portion of the summer, or to fix a period of, say, twelve months as the maximum of continuous stall feeding.” Do you adhere to these views?—These were my opinions at the time I wrote that article.

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3827. But since then it has been discovered that tuberculosis is not a disease generated spontaneously, but is the result of a specific organism; would not that rather increase your dread of infection being conveyed by milk?—I decline to be held by the hypothesis. I tried by experiment, and I hold to experiments rather than the hypothesis.

3828. But you have granted me that at the present moment you believe in the specific organism theory?—Yes.

3829. You did not know of that when you wrote that?—No, probably not.

3830. Don’t you think that it rather tends to increase the danger of the disease being communicated?—In the case where the udder is tuberculous I think so.

3831. But suppose the bacillus organism is found to go from the one part of the animal to the other, don’t you think that, having discovered that that is the foundation of the disease, it is not constitutional, but the result of a specific organism capable of being hurried from one part of the system to another—does not that increase the risk of infection?—But the man who was looking after the cows was always drinking the milk, and came to no harm. I must hold by my own personal experiments, and let the inoculation experiments take the second place. As to the hypothesis of Koch’s series of experiments—and his experiments are very good—I quite accept them.—I should say that one would have a fear that the milk would be tubercular.

3832. You are keeping up your character for candour. My friend made merry, and he wanted you to make merry also over Professor M’Call’s sirloin—does not the fact that tubercles were found inside the marrow of a large bone indicate to you that

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there is a power of spreading from one tuberculosed portion of an animal to another, even although the portion is enclosed in a bone?—Professor M'Call gives no suggestion that it spread from one place to another in the animal, because he only produced a sirloin, and he says that it was diseased, and I have no evidence that it was diseased anywhere else.

3833. But so far as we know these microbes are not spontaneously generated. You don't start the theory that the microbe was spontaneously generated in the marrow of the beast; he has got in there somehow. Could he get in there from the outside and enter part of the body except by the blood stream or by the lymph stream?—My answer is this, that you certainly get the bacilli in bone and joint without any apparent disease elsewhere.

3834. But you don't suggest that they are spontaneously generated there?—I have no suggestion to make.

3835. Can you as a scientific person propound the theory that they were generated spontaneously?—No, I propound no theory.

3836. They must come from somewhere, or the spores must?—Yes.

3837. And there is nothing to laugh at in the instance that Professor M'Call gave of the microbes being found in the marrow of a bone—that is an important fact?—Yes, but it is a rare fact.

3838. It makes it all the more important, but it is relevant, and important although rare?—Not to the question we are fighting, so far as tubercle in the lung is concerned.

3839. That we will discuss afterwards, but it shows that bacilli are to be found inside the bone and in the marrow?—It apparently was so in that case.

3840. My friend asked you about heredity; we all know that such diseases as consumption run in families. Do I understand your view to be that the thing that is transmitted is the pre-disposition to the disease rather than the actual disease itself?—I believe that to be the general cause—the most ordinary method of transmission.

3841. The frame inherits the pre-disposition to take on the disease?—Yes, that is my opinion.

3842. But is that not almost a necessary conclusion if it be the case, as you admit, that scrofula, like tuberculosis, is the result of a specific organism?—I don't understand your question.

3843. Scrofula is the result of a specific organism?—We will assume that.

3844. And either the organism was transmitted from the mother to the child, or else the thing that was transmitted was a pre-disposition?—Yes.

3845. It must be the one or the other?—Yes, on that assumption.

3846. And you prefer, as most people would, the latter assumption, that the thing transmitted is the pre-disposition?—Yes, in general.

3847. And with the pre-disposition, when the microbe gets

entrance to the body, by inhalation or any other means, it finds a prepared soil?—That is a reasonable explanation.

3848. And the explanation which you accept till more light dawns upon us?—Yes.

3849. Struma affects bones and joints?—Yes.

3850. And the muscles?—No, not primarily.

3851. But gradually?—No.

3852. In its later stages?—No; it may encroach on the muscle, but it does not affect the muscle.

3853. Does scrofula not affect the muscle?—No.

3854. Not primarily, but secondarily?—No.

3855. Not at all?—No.

3856. Not indirectly?—If it advances to a general suppuration of a limb, the suppuration may probably include the muscular tissue.

3857. But as the disease, to your mind, advances, would the animal become emaciated and the muscle change its character?—Probably.

3858. Certainly?—Yes, I suppose so, if it lived long enough.

3859. Don't suppose; as consumption proceeds, don't we find in the streets every day people who are become thinner from consumption?—I thought you were speaking of cows.

3860. You know about human beings?—No phthisical human beings would get the strumous condition in their limbs, however thin they became. You will get a strumous human being, and the local disease cured, and the man or child quite well afterwards.

3861. Assume that it goes on; the muscle will be affected?—I don't know, but it will change its character.

3862. And in the case of an ox or a cow it would become less nutritive?—Yes, I should condemn such a thing.

3863. And it becomes a question of degree in scrofula and struma?—Yes.

3864. It is a matter of time with scrofula when the flesh or muscle gets into such a condition that you would condemn it?—No, I would condemn such a limb. I don't know that I would condemn the whole carcase; I am not an authority, and have no right to condemn anything, but it would be unfit for human consumption where there was any sign of local tuberculosis.

3865. But my point is this, that if an animal is suffering from what you call scrofula, which you are distinguishing from tuberculosis, is it not a question of time, sooner or later, when the muscle of the animal, if the disease proceeds, will become unfit for food?—Yes.

3866. The microbe that produces that is the microbe that produces tuberculosis?—Yes.

3867. And it is a matter of time and of the virulence of the poison when the tuberculosed animal would become unfit for human food?—Yes.

3868. You have been putting more faith in your experiments than in those of others, and you told us that you had never found any traces of bacilli or tuberculosis in the muscles?—Yes.

3869. Are you aware that other observers have done so?—I

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May 31, 1889, am not aware that any observer has found any bacilli in an apparently healthy muscle.

Dr. F. Imlach. 3870. Is Sir Charles Cameron a man distinguished in his profession?—Yes.

3871. Of very high distinction in the profession?—Yes

3872. Look at p. 252 of the Blue Book, Q. 7930, “With regard to the antonomy of the disease as you have seen it in cattle—the distribution of disease in the animal—what would you consider the commonest states of the disease in your experience?—In the lungs, of course, principally, but also the whole of the peritoneal cavity I have seen covered with tubercles.” Then look at Q. 7939, “Then it is quite your opinion that all the flesh of all tubercular animals should be destroyed?—Yes; no matter in what condition, they ought to be destroyed. I must say that, be the condition satisfactory or otherwise, I unhesitatingly condemned any animal that had tuberculosis in any part of it.” That is the opinion of a very eminent man?—Yes, I think so.

3873. And proceeding upon somewhat extensive observation on his part?—Yes, I think so, but may I make some remarks upon that. I would wish to do so. With the exception of his final opinion about all flesh being destroyed I quite agree with him, but he does not say that he found tubercle in muscle irrespective of this, as in the case of Professor M’Call, that if the bone is diseased the disease may encroach in that immediate neighbourhood.

3874. He is asked: “Have you seen it in the muscle?” and he says “Yes.” Mr. Cope is the chief inspector of the Agricultural Department of the Privy Council, and I am going to refer you to a speech that he made in this book of Fleining’s at p. 167. He refers to M. Bouley, who was a distinguished man in Paris on these matters?—Yes.

3875. Do you know what he was?—No, I cannot say.

3876. Here is what Mr. Cope says, addressing the President—“You, Mr. President, are well aware that recently a discussion has taken place in Paris on this point, and it has been shown by M. Bouley that this disease is not only found to exist in the lung but also in the muscular tissue. Now, instead of, as has been suggested, allowing certain portions of an affected carcase to be consumed as human food, I think it would be more consistent to lay down a rule that if an animal should be found to be affected with tuberculosis, no part of its carcase should be so consumed.” There is another observer who has found it?—Yes, but it is not in accordance with my experience.

3877. But you will permit me to say that—I will not say it; we know that you are otherwise very largely engaged?—I have examined a great number of carcasses.

3878. You have granted me with candour the high position of Sir Charles Cameron, but I am going to ask you whether several other witnesses before this commission are men in very high position also, such as Mr. Lingard?—Yes.

3879. Look at the index and tell me whether you do not find

the names of a great many witnesses for whose opinion you would entertain very considerable respect. Don't give me the names of those that you don't think much of, because it would hurt their feelings. They are men in high position?—Yes.

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3880. And I find on the committee itself such names as Victor Horsley?—He is an admitted authority.

3881. There are eminent Scotchmen, but I am not going to ask you to praise them; there are Horsley and Professor Brown?—Yes.

3882. These are eminent men?—Yes.

3883. And you grant me this, that a recommendation by such a committee following upon the evidence of such witnesses is one that is not to be disregarded without considerable hesitation?—No; respect should be paid to their opinion.

3884. After all this evidence has been led, and with the recommendations that we have in the report upon the consideration of the evidence by such a committee, those who are charged with the public health ought to entertain some idea as to whether the course they recommend should not be adopted?—Yes, but if the report went beyond the evidence?

3885. But that was not the opinion of those who heard it?—Professor Brown went and fed guinea-pigs and rabbits with the flesh of tuberculosed animals afterwards, and he could not get tubercles.

3886. *Mr. Comrie Thomson.*—That is not evidence.

3887. *Mr. McKechnie.*—My friend put a question about Professor Brown's evidence, and the witness was proceeding to give a statement. I admit legally that it is not evidence, but for the last three days we have been hearing my friend demonstrating the opinions of other men—and particularly Klein's statement was read from the *Glasgow Herald*, and the witnesses were asked "Do you adopt that," and a great many things like that. If the witness says that he knows, as a matter of fact, that Professor Brown has changed his opinion, I submit that the witness is not to be stopped.

3888. *Sheriff Berry.*—I don't think it is of the slightest consequence what his opinion of Professor Brown's present opinion is, because if Professor Brown's opinion was necessary, it should have been got from himself.

3889. *Mr. Comrie Thomson.*—But it is in the blue book.

3890. *Mr. McKechnie.*—Is your Lordship to attach any weight to Klein's evidence?

3891. *Sheriff Berry.*—I attach none to Klein's evidence, except in so far as it may have been adopted by the other witnesses.

3892. *Mr. McKechnie.*—But in this case I submit that it is for this witness to say whether he agreed with Professor Brown, and he is not to be put down because he differs from these eminent men.

3893. *Sheriff Berry.*—He is not put down, but he is giving us what Professor Brown's change of views is, as to which we have no evidence.

3894. *Mr. Comrie Thomson.*—This is a fact, and not an opinion, that he has made an experiment.

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3895. *Mr. M'Kechnie*.—If the witness said "I adopt Professor Brown's evidence," then your Lordship would be bound to hear it.

3896. *Sheriff Berry*.—Whether it was Klein's evidence or not, it was a statement which the witness was asked if he adopted.

3897. *Mr. M'Kechnie*.—Then, I appeal to another principle, that if a witness is answering in cross a question of fact, and he is proceeding to give a qualification of his answer, I have never yet known him stopped.

3898. *Sheriff Berry*.—If he gives a qualification which is within his knowledge.

3899. *Mr. M'Kechnie*.—Precisely, and your Lordship will judge the value of the answer, and whether it is not evidence.

3900. *The Sheriff*.—If the witness chooses to give it, let him give it, but I will put what weight on it I think fit.

3901. *Mr. Comrie Thomson*.—My learned friend starts by saying that this evidence is not admissible, and about that there is no question.

3902. *Mr. M'Kechnie*.—I started with nothing of the sort.

3903. *Mr. Comrie Thomson*.—He says that we have been transgressing the laws of evidence for the last three days, and one more transgression will not do any person any harm.

3904. *Mr. M'Kechnie*.—I object to my learned friend saying that I said anything of the kind.

3905. *Mr. Comrie Thomson*.—I thought that my learned friend knew the law of evidence better than he seems to. It is plainly not legal evidence, but it might be admitted on the ground that we have not been keeping to the strict rules of evidence, and my friend says that I was attempting to introduce the evidence of Klein, who was not here. What is proposed to be done is something totally different. I have not got Professor Brown's statement in the *Herald* newspaper, or his evidence in the blue-book or anywhere else, to put to the witness and ask him if he agrees or disagrees with it. What the witness says is that he did certain things, and that certain results were arrived at, as to which we know nothing; and then he is intending to proceed by stating that the result was that Dr. Brown must have changed his opinion. The thing is perfectly outrageous.

3906. *Mr. M'Kechnie*.—My friend has certainly not been able to understand me, but that was not my fault. I said that we had not been proceeding on the strictly legal rules of evidence, but if anything is remarkable in this case it is this, that from the beginning to the end of it we have been proving that people have changed. How often have you heard that Koch has changed his opinion, and many people have changed their opinion since his great discovery. The point is this, that my friend says "Professor Brown is a great man—is that so?—Yes. And do you agree "with the evidence in that blue-book?—Yes," and my witness is quite entitled to say, "But I qualify my opinion of his evidence "in adopting that by stating what I know to be a fact." Nobody knows what the witness is going to say, and counsel is not entitled to put a question, and then jump up in the middle of the

answer and say, "It is incompetent to say more than you have said." Your Lordship will judge of the value of the evidence, it may be of no value.

3907. *Sheriff Berry*.—Let me hear what the gentleman has to say, if it is a mere statement.

3908. *Mr. M'Kechnie*.—I understand the witness has to answer the last question.

3909. *Mr. Comrie Thomson*.—My learned friend has quite misrepresented the state of matters. There is not a word about Professor Brown's evidence. His character was put by me to the witness as a member of the committee, and that is all. And what I proposed to ask was, whether he did not consider that committee was a committee of distinguished men, and he was proceeding to make a statement, a portion of which I heard, and a portion of which your Lordship heard, and which both of us unhesitatingly, as any lawyer would, stopped, and I would be no party to leading irrelevant evidence.

3910. *Sheriff Berry*.—If Mr. Thomson objects to it, I cannot allow it.

3911. *Mr. M'Kechnie*.—I thought your Lordship had allowed the question to be put.

3912. *Sheriff Berry*.—I understood that Mr. Thomson was not going to object, and I was going to allow him to go on, but if the objection is insisted upon, I must sustain it.

3913. *Mr. M'Kechnie*.—It will be my duty to raise the question in re-examination.

3914. *Mr. Comrie Thomson*.—You know of no town in England in which the total carcase of an animal with localised tuberculosis was destroyed?—No.

3915. You are aware that there is a decree applicable to the whole of France, which was published last July on the subject?—Yes.

3916. Have you made yourself familiar with its terms?—Yes, I have read it.

3917-8. And you are aware that the third portion of it is this, that "The flesh of tuberculous animals shall be excluded from consumption—(1) if the lesions are generalised, that is to say, not confined exclusively to the visceral organs and their lymphatic glands." Do you agree with that portion of the decree that I have read?—Yes; I agree with it.

3919. Do you think it goes too far?—Yes. The first portion of the sentence I agree with, but not with the rest.

3920. There is the passage, "If the lesions, although localised, have invaded the greater part of an organ, or are manifested by an eruption on the walls of the chest, or on the abdominal cavity"?—I would not agree with that.

3921. You think although the walls of the chest exhibit an eruption, there being lesions, the flesh may be safely consumed?—I do.

3922. And you think that the resolution of the French Government is a mistaken one?—No; I think they have gone further than was necessary.

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3923. To that extent it is a mistake?—Yes, I think so.

3924. Are you aware that in the adjoining city of Edinburgh this flesh is withdrawn from consumption?—I have read to that effect.

3925. And in Greenock?—I have read to that effect.

3926. And in Paisley?—I have read to that effect.

3927. Is it within the possibility of your comprehension that the French nation and those charged with the health of these large towns in Scotland, may be more enlightened than you are in England?—That is possible.

3928. Look at article 35: “Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.” I think you said that you did not agree with that, and that there was no evidence to support that?—I don’t mean to say that. I quite agree that if bacilli were there, and if they were virulent, cooking would be often insufficient. Roasting would be insufficient. Proper boiling would probably be sufficient.

Re-examined by *Mr. M’Kechnie*.

3929. Do you know the practice in Dublin of condemning in whole or in part?—I have no personal acquaintance with it, but I have read Sir Charles Cameron’s evidence.

3930. And he is Medical Officer of Health for Dublin?—Yes.

3931. Do you know whether, since this blue book was published, and that report made, any experiments have been made in Great Britain upon this subject?—Yes.

3932. You have been paying attention, and you are still paying attention, to the literature, history, and opinion of this subject?—Yes; I think it is a most important question.

3933. And you are familiar with all that is going on?—Fairly familiar.

3934. Do you know whether any experiments have been made since that publication of this blue book?—Yes; I think it is a most important matter.

3935. Give me the name of the experimenter?—Professor Brown is one. He is the Principal of the Royal Veterinary College.

3936. When did he conduct his experiments?—Last year.

3937. You know that he signed that report as one of the Commissioners?—Yes.

3938. Have his experiments——

3939. *Mr. Comrie Thomson*.—I think this is the most absurd thing I have listened to, because, notwithstanding your Lordship’s deliberate ruling, Mr. M’Kechnie attempts again to raise the question as he threatened, to my great amazement, to do upon re-examination.

3940. *Mr. M’Kechnie*—I threatened nothing.

3941. *Sheriff Berry*—I cannot hear anything about experiments that this gentleman knows nothing whatever about.

3942. *Mr. M'Kechnie*—This blue book is put forward as the conclusive and final indication of British opinion on the other side.

3943. *Sheriff Berry*—It is a public document.

3944. *Mr. M'Kechnie*—Precisely, and Professor Brown signs it, and therefore it is to be held as conclusive, because he is an eminent man.

3945. *Sheriff Berry*—It is not to be held as conclusive, but it is evidence of what the Privy Council Committee resolved.

3946. *Mr. M'Kechnie*.—I put the question and your Lordship may repel it. The question is—can you give me the name of any distinguished man in Great Britain who has made experiments since the publication of the report of the Privy Council Commissioners in July.

3947. *Mr. Comrie Thomson*.—I make no objection to that.

3948. *Sheriff Berry*.—He said Professor Brown.

3949. *Mr. M'Kechnie*.—Then I said—what are those experiments?

3950. *Sheriff Berry*.—What were this gentleman's means of knowledge? Was he present?

3951. *Mr. M'Kechnie*.—I wonder who was present at all those experiments given on page 80 of Fleming's book.

3952. *Mr. Comrie Thomson*.—Who was examined as to the result?

3953. *Sheriff Berry*.—Are these recorded in any book that he now speaks to?

3954. *Mr. M'Kechnie*.—I am asking him that.

3955. *Sheriff Berry*.—You can ask him that.

3956. *Mr. M'Kechnie*.—Is Professor Brown one of the experimenters?—He was one of the experimenters.

3957. Has the result of his experiments and his opinion been ever published anywhere?—Yes.

3958. Where?—In the Journal of the Royal Agricultural Society.

3959. For what time?—Published last month, April.

3960. Have you read it there?—I have.

3961. *Mr. Comrie Thomson*.—I won't object to you getting it if it is there.

3962. *Mr. M'Kechnie*.—Have you the result there?—Yes, on page 323.

3963. Your Lordship will allow it to be read.

3964. *Mr. Comrie Thomson*.—I don't object to that.

3965. *Mr. M'Kechnie*.—Then give us the result?—These are experiments made with a grant from the Royal Agricultural Society and this is the Journal of the Royal Agricultural Society of England for April, 1889, page 323.

3966. Is it a paper by him?—It is a report by him to the Royal Agricultural Society—"As regards the character of the tuberculosis, the causes of tuberculosis of cows which were sent to the college were of a very severe form." Then on the question of the ingestion of meat, he says—"Rabbits and guinea-pigs fed on the flesh of the diseased cows did not take the disease. These

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May 31, 1889. "results are significant, but the experiments with the flesh
 — "will have to be repeated before any positive conclusion can be
 Dr. F. "deduced from them." That is all he says.
 Imlach.

3967. *Mr. Comrie Thomson*.—There is not much in that.

3968. *Mr. M'Kechnie*.—We have taken a long time to get at it.

3969. (To witness.) While my friend was cross-examinining you, he used the word "acute" and "chronic," and you asked a question upon that; are the words "acute" and "chronic" properly descriptive at all?—No, there is a confusion of two meanings. One is a condition of intensity, and one a condition of duration.

3970. Would it be more proper to speak of tuberculosis as proceeding by stages?—I think the division of localised and generalised tuberculosis is better.

3971. I show you Professor Fleming's book, published in 1875, which is not the same one that we have been quoting from, but "A Manual of Veterinary Sanitary Science and Police," vol. ii., page 369, by Fleming himself. Does he not divide that disease into three stages, and give the symptoms of each stage?—Yes.

3972. He does not speak of acute or chronic?—No.

3973. *Mr Comrie Thomson*.—I beg your pardon; he says—"The progress of tubercular phthisis is sometimes acute, but it is "most frequently chronic." That is at the top of the paragraph on page 371.

3974. *Mr. M'Kechnie*.—But I began at page 368, where it is stated to be chronic in three stages?—Yes.

3975. Have you heard of the word "arrested" in connection with tuberculosis?—Yes.

3976. Had the tuberculosis in the case of this cow been arrested, in your opinion?—I should say from the condition of the lungs, it is quite possible that it was arrested, but I could not pretend to say that further progress was impossible.

3977. Although it may be arrested for a stage, it may break out again, and lead to a condition of emaciation, resulting in death, or may lead to convalescence?—Yes.

3978. I don't know whether you have made many *post mortem* examinations?—Yes, I have been present at very many.

3979. Do you find in the human subject signs that localised tuberculosis had been arrested, and that the patient had recovered?—Yes, I think that may be fairly stated.

3980. Do you know about the death-rate in Liverpool?—It has diminished very much of late years.

3981. Has it diminished from consumption?—The tuberculous group has diminished immensely within the last ten years.

3982. By what percentage?—I can give you it in figures. It has decreased from 2,100 per annum in the tuberculous group, to 1,700 per annum, while the population is increasing, taking 1879 to 1888.

3983. What has been the increase in the population between 1879 and 1888?—I cannot give you it.

Re-cross-examined by *Mr Comrie Thomson*.

3984. Do you attribute that increase of the population to the

fact that no precautions are taken to keep tuberculous animals out of the market?—There are very strict regulations.

3985. But you don't attribute it to the fact that there is no condemnation of tuberculous animals?—They do condemn tuberculous animals.

3986. But they do not condemn the whole flesh, unless it is affected visibly?—No.

3987. Is it the increase of the population on the decrease of the death-rate that is attributable to that?—I don't attribute it to that. I don't see the connection between the one and the other.

3988. The Journal of the Royal Agricultural Society, the paper from which my learned friend quoted, is published in April, 1889, but the investigations were in 1888—is there anything to show in what period of 1888 these experiments were made?—No.

3989. You are aware that the report to which Professor Brown appends his name was signed on 10th July, 1888?—Yes.

3990. You cannot tell whether the experiments here recorded were made before or after that time?—No, I cannot tell from the book.

3991. If they were made before that time he had all these facts and experiments before him when he signed the report?—I think he must have included them in the appendix to the report, they are so important.

3992. So that the opinion that he gave in the report is subsequent to the investigations that you have been referring to?—No, I think that they must have come afterwards, because he was dissatisfied with his own report probably.

3993. Is not that guess work?—Pure guess.

3994. Pure guessing is not evidence?—But you asked me.

3995. My friend stopped at a curious point. What you said was this—"These results are significant, but the experiments with the flesh will have to be repeated before any positive conclusion can be deduced from them." The rest of the sentence is—"It is evident, however, that milk containing bacilli is certainly infective." Can you state any intelligible reason why, if milk containing bacilli is evidently infective, meat containing bacilli should not be assumed to be infective?—No; I should be willing to assume that meat containing bacilli ought not to be eaten.

3995-1. Which is practically my case?—But I have never found bacilli in flesh, and I have examined it very many times.

3996. But if it is infective in milk it is infective in meat?—Yes, it is so, by all analogy.

3997. I refer you to page 371: "The progress of tubercular phthisis is sometimes acute, but it is most frequently chronic"?—Yes.

3998. The distinction between acute and chronic tubercular phthisis in cattle is recognised?—I suppose he means that cattle sometimes die quickly and sometimes slowly.

3999. I assume he means what he says, and I can only tell you that he says that it is sometimes acute, but most frequently

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May 31, 1889. chronic. Does not that look as if he were opposing chronic to acute?—Yes.

Dr. F. Imlach. 4000. He further says, "And its symptoms in the milder cases are not always particularly well defined; they may, however, for facility of description be divided into three groups, each belonging to a stage in the course of the disease"; and what my learned friend got you to say was a misapprehension of the other statement. He divides it into chronic and acute, and then he takes the symptoms of the milder cases and divides them into three stages. Do you think that you have been misled?—Perhaps it is Dr. Fleming that is confused.

4001. There is no confusion in expression; it is somewhere else?—It seems to me to be a confusion between acute and chronic, and then into three stages.

4002. Don't you see that he divides the same thing into acute and chronic, but the milder cases into three stages?—He says that they may be divided into three stages.

4003. The symptoms may?—"But each belonging to a stage in the course of the disease"—three stages of the disease, and three sets of symptoms.

4004. Do you mean to tell me that the distinction between chronic and acute phthisis is not a distinction that you are familiar with?—I am familiar with it.

4005. Then what was the need of mystifying us about it?—(No answer.)

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Dr. THOMAS WHITESIDE HIME, *sworn*, examined by
Mr. Jameson.

4006. What is your age?—Thirty-nine.

4007. You are a Doctor of Medicine and a graduate in Arts of the University of Dublin?—I am.

4008. You are also a member of the Royal College of Surgeons of Edinburgh?—I am.

4009. Did you, in April last, receive an honorary degree of Doctor of Medicine from the University of Dublin?—Yes.

4010. You were for a considerable time medical officer of health for the town of Sheffield?—I was.

4011. For how long?—Five years.

4012. Sheffield has a population of 320,000?—Between 320,000 and 330,000.

4013. And later you have been medical officer for the town of Bradford?—I have.

4014. With a population of 230,000?—Yes, I believe it is that now.

4015. You have been president of the Society of Medical Officers of Health of the North-Western Counties of England, and also of the Society of the Yorkshire Medical Officers?—Yes.

4016. You are a member of the Council of the Society of Medical Officers of Health for all England?—I am.

4017. Last year you were president of the Medical and Sur-

gical Society of Bradford and District, and for several years you have been president of the Microscopic Society of Bradford?—Yes.

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4018. You are also the author of various works on public health, and have contributed largely to medical journals on that subject?—Yes.

4019. For sixteen years you were a lecturer in the School of Medicine in Sheffield, and you have been frequently engaged in inquiries similar to the present?—Yes.

4020. I believe a report of yours was presented to Parliament on scarlet fever and cattle disease?—Yes.

4021. You have also written articles on micro-parasites and diseases of that kind in the New Sydenham Society's edition?—Yes; in one of the books on the table there are two articles by me.

4022. You have also studied in France and Germany?—Yes.

4023. And have you specially devoted yourself to the investigation of bacteriological diseases, including tubercle?—Yes.

4024. And have you made numerous experiments to investigate the nature and mode of propagation of that disease?—Yes.

4025. Have you throughout taken a lively interest in the subject of tuberculosis?—Yes, very great.

4026. While medical officer of Sheffield and Bradford, did you regularly inspect the markets and slaughter-houses?—Yes.

4027. Are all cases of diseased carcasses officially brought to your notice whenever there is any dispute regarding them?—Invariably.

4028. On 16th May you, on the instructions of the agents of the parties in this case, proceeded to Yorkhill refrigerator and inspected two carcasses you found there?—I did.

4029. One a cow and the other a bullock?—Yes.

4030. I think the only information you had got about the cow was that it had been examined, and approved of and passed by the inspector at Leith, Professor Walley?—Yes.

4031. Did you see the various organs of the two sides of beef belonging to both animals?—Yes.

4032. Take the case of the cow first, and tell us how you describe the carcass as to general nourishment and condition?—It was the carcass of a well-nourished cow. Judging by the teeth the cow would be about two years old, and there was plenty of fat and plenty of lean well disposed in all parts of the body, and altogether it was a carcass that was perfectly fit for human food except certain parts.

4033. You said that the cow was two years old; is it not the bullock you are speaking of?—Yes; the cow was older.

4034. You say that it was an old cow?—Yes.

4035. Tell us what was its condition as to nourishment.—It was a well-nourished cow. Its meat was of a good colour, and there was abundance of fat interspersed with the lean. There was an abundance of fat deposited on various parts of the body, and altogether it was the carcass of a well-nourished cow.

4036. Did you see any signs of disease upon it?—Yes.

4037. Where?—The lungs were partially diseased,

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4038. Except the lungs, was the carcase that of a healthy animal?—Yes, in every respect.
4039. Coming to the lungs, would you tell me what you saw upon them?—There was some tubercle on the base of the lungs—not very great in extent. These tubercles varied in size from perhaps the size of a grain shot to the size of a kidney bean or thereabouts.
4040. Apart from these tubercles, were the lungs themselves healthy?—The other parts of the lung were of good colour. They crepitated when squeezed between the fingers as a healthy lung will do, and they floated in water, and a large number of pieces were cut out and they presented all the appearance of healthy tissue.
4041. Those parts of the lung were not affected with tubercles?—It is impossible with tubercles to have crepitation, and they could not have been very extensive. It is the result of air being forced in and out.
4042. The effect of tuberculosis is to solidify and harden the tissue of the lung, so as to prevent the free passage of air into the tissues, and altogether prevent that crepitation which is the natural sign of a healthy lung under pressure?—Yes.
4043. When a lung is seriously affected with tuberculosis would it float in water?—No; it is very heavy, and it sinks.
4044. Did you try if this would float?—Yes, I tried several parts of it.
4045. Did you make an examination to ascertain the extent of the disease?—Yes, both in the organs and also in the carcase of the animal, the flesh of which had apparently not been touched before I cut into it.
4046. And did you find any abscesses?—No, nothing like it.
4047. Would you have expected to find an abscess if tuberculosis had been far advanced?—Undoubtedly.
4048. Did you find any trace of tubercle in the condition of softening?—None.
4049. *Sheriff Berry*.—Is that in the flesh?—Anywhere.
4050. *Mr. Jameson*.—And the largest portion of tubercle which you noticed was no bigger than a kidney bean?—That was the largest size. It ran from a grain shot to the size of a kidney bean.
4051. Did you cut out glands in the various parts of the cow?—Yes; I cut off portions of all the organs, and also of deep glands, including one in the thick part of the thigh, which is commonly known as the “pope’s eye”—deeply seated in the tissues.
4052. Did you find in these glands any trace of disease?—Not the slightest.
4053. You also examined the womb?—Yes.
4054. Was it perfectly healthy?—Yes, perfectly healthy.
4055. Did you take some specimens for examination?—Yes, various parts of the different organs.
4056. Coming to the bullock, give us a general description of its condition?—It was a well-nourished carcase, with meat abundant, of a good, healthy, natural colour, and there was an abundance of fat on the carcase, and altogether it was that of a well-nourished beast.

4057. Did you see any trace of disease about it?—No, there was a little redness on the interior of the chest, but we don't call that a disease any more than you call a black eye a disease. May 31, 1889.
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4058. It was a local affection of an inflammatory character?—Yes, a mere fleeting thing.

4059. Did it present any appearance to the eye of tubercle?—Not the slightest.

4060. Or of abscess?—No.

4061. Did you see in the flesh of either the cow or the bullock any trace of disease whatever?—None whatever.

4062. Was the flesh hard?—It was frozen when I saw it.

4063. But to all appearance it looked good, healthy flesh?—Yes, excellent beef.

4064. In your opinion were these carcasses fit or unfit for human food?—They were perfectly fit.

4065. Would you have passed them if they had been submitted to you for inspection?—I would have passed them and eaten them.

4066. You are aware of a decree of the French Government regarding cattle?—Yes.

4067. Do you think that these cattle would have been passed under that decree?—Yes, both of the animals.

4068. About the nature of this tubercular disease, I believe Professor Koch was the first person who made specific investigation into it?—He is really the father of the tubercle bacillus, and it is not his only child.

4069. What are the various ways in which this bacillus could be introduced into the human body?—Undoubtedly the commonest way is by inhalation through the lungs, also by ingestion, and also by inoculation, and exceptionally, it is said to be (if ever) congenital.

4070. Hereditary?—Yes, very rarely either in man or animal.

4071. Far the commonest way is by inhalation?—Undoubtedly.

4072. Both in the human subject and in animals?—That is certainly true of man, and I believe it is equally true of animals.

4073. As a rule does this disease spread through the body, or does it remain for a considerable time in the place where it first locates itself?—That depends on the circumstances. I believe that the rule is that it is exceedingly slow in its progress.

4074. And it may remain permanently localised?—Yes, or it may die out altogether.

4075. In its localised condition and without ever spreading through the system generally?—Without spreading beyond the place where it has made its first entrance.

4076. Can you tell us whether the human body offers a favourable breeding ground for it?—I think a very unfavourable one.

4077. What do you judge of?—I think there is a good deal of evidence. In the first place, we are frequently coming in contact with bacillus, but we don't all take it, and we have cases of inoculation where people have been accidentally inoculated, where doctors have been accidentally inoculated, and slaughter-house men, and it has not spread beyond the point of inoculation, and in addition to that we continually find proofs that men and

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 Dr. T. W. Hime. women have had tuberculosis at one stage of their life, and recovered to live long and have children and children's children, and not a trace of tubercle among them; and it is very common to see tuberculous children suffering from scrofulous glands in the neck, in the poorer quarters of the town, but as a rule they don't die. They frequently recover and have not the slightest trace of tubercle, the tuberculous parts being removed by the surgeon.

4078. You mentioned butchers as getting these tubercles; is that what is known as butchers' warts?—Yes; on their hands most commonly, in connection with tubercular animals, and getting inoculated.

4079. These don't spread?—I think the rule is that they do not spread.

4080. And in public hospitals and workhouses there are numerous tubercular and consumptive patients without the disease spreading much to other people?—I believe the general rule throughout the United Kingdom is that all the tubercular patients are treated in the ordinary wards with the other patients, and it is not recognised that the disease is readily transmitted. I may mention that in the hospital at Brompton, which is the largest institution, I believe, of the kind in the world, it is well known that the nurses do not take it, and the doctors do not take it.

4081. Does the sputum of consumptive patients, when it dries, form one of the most frequent causes of the spread of tuberculosis?—Well, it is one of the very readiest means of inoculating tuberculosis. It is a very simple plan to take a little sputum and you will have no difficulty in making a successful inoculation, and you find bacilli abundantly present, and having unfortunately such large quantities of the sputum everywhere, one can only come to the conclusion that you have an infective material everywhere.

4082. When dry it is carried about in the air, and probably inhaled by healthy people?—It must unavoidably be inhaled and swallowed.

4083. I don't know whether we have ever inquired about the size of the bacillus—can you give me the lineal dimensions?—It is about the eight-thousandth or ten-thousandth part of an inch in length, and about the fifth or sixth part of that again in width.

4084. About the forty-thousandth part of an inch?—Yes; it would take some thousands of them lengthways to reach from one side of the eye of a needle to the other.

4085. And the spores are, of course, greatly smaller?—They have two or four spores, and there is a detectable interval between them as they lie in their matrix.

4086. Is it decided yet whether it is an animal or a vegetable?—I think all these micro-organisms are recognised as belonging to the vegetable kingdom.

4087. It is of the same character as the bacterium of pus and of putrefaction?—It is of the same general character, but there are specific differences.

4088. Are tubercular bacilli destroyed, you think, by the

digestive action of the stomach?—There is very strong evidence that that is so. Seeing that tubercular meat is very common, I believe that we must destroy countless millions of them continually.

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4089. These tubercular bacilli, I take it, will not, as an inference of the facts that you have given us, attack the human subject unless it is in an unhealthy condition, and there are other predisposing causes?—They are constantly making attacks, but they are being repulsed.

4090. You know the report of the Royal Commission on Tuberculosis; we have had a good deal said about it in this enquiry?—It has been my daily portion for some time.

4091. I refer you to paragraph 24 in that report:—“(Swallowing.) Numerous experiments have similarly been performed upon the possibility of the tubercular virus entering the body through the alimentary canal. In these experiments tubercular secretions, *i.e.*, mucus, saliva, milk, &c., portions of tubercles from diseased tissues, and cultures of the bacilli have been swallowed by various animals (calves, pigs, sheep, rodents, fowls, &c.) with the effect that the disease has fatally followed the ingestion of such infective material.” Is there included in that description the healthy flesh of animals locally affected with tuberculosis?—No; there is nothing whatever to suggest that the meat is infective.

4092. You read this question, as a scientific man, as to the nature of the ingested food with which these have been tried?—Things that were manifestly infected—things that there is no doubt about.

4093. Which were filled with bacilli?—Yes.

4094. You see this paragraph 24 refers on the margin to Q. 7529 of the blue book; read that question—“Would you kindly give the particulars of those cases to which you refer?—From a Mr. Cox. He gave the case of a boy who was inoculated in the hand by sores. The other cases all had reference to the ingestion of milk. We had no case before us where there was the ingestion of flesh as causing tuberculosis. The other cases were all by the ingestion of milk. Several members of the family of a dealer were infected by the milk from what are called wasters (I believe that is the name). Then there was a cousin of the author who became consumptive, and, during the progress of her illness, three cows on the farm were found to be suffering from tuberculosis. The next cases he narrated were those stated by Mr. Hopkins. They consisted of two female members of a family who drank milk and became consumptive, and it was found that the cows on the farm were tuberculous. The next case was one which occurred in Principal Walley’s own experience. Three of his children were affected by milk which they drank, and one of them died subsequently (and that child had drank the most, I understood) with *tubes mesenterica*—that is, of tubercular affection of the glands of the abdomen. Then he mentioned a case from America, where a child had been also affected with inflammation of the head. It was found

May 31, 1889. "there that the milk which that child used had been supplied from a tuberculous cow. Then the case of all others which made most impression upon the society was one which was given by Dr. Woodhead, of Edinburgh, and which is the same instance as that given to the committee in Mr. M'Fadyean's evidence. It occurred in an institution, and the patients, who had ingested milk from tuberculous cows, were affected with phthisis; and pigs, fed on the same milk, became also affected with tubercle. When the milk was stopped, the health of the children and pigs improved. These cases all showed infection, except the first, by the ingestion of milk. No case in man from eating the flesh of tubercular animals was stated. But a question arises here, and it is this—first, is tubercle in the general system of an animal sufficient to affect the milk, or is it only in cases of tubercular udders that the milk is dangerous? Observation only points clearly, at present, to the latter condition—that is to say, that the udders must be tubercular. Of course the milk becomes affected, but it is from the udders, or external sores." Do you think that statement as to the experiments is borne out by the question and answer to which we are referred here?—I don't see any suggestion here about meat at all.

4095. But take it as infective material; do you notice that in the answer that when the milk was stopped the health of the children and pigs improved?—Yes, but this could not be if they had become tubercular.

4096. That points to the fact that they did not terminate fatally?—Yes.

4097. Is there anything in Q. 7529 to warrant the statement that is there made as apparently the results of all the experiments that the disease has fatally followed the ingestion of milk?—I think there is a very long hail between them.

4098. And in this answer there is a case where no deaths followed?—Yes. If you make up your minds that people will die of milk, it is the readiest thing to attribute a death to milk.

4099. But there is no connection between them?—No; there is no necessary *sequitur* between the ingestion of the milk and the death of the patient.

4100. *Sheriff Berry*.—I see in one part, that "three of his children were affected by milk which they drank, and one of them died subsequently (and that child had drank the most, I understood) with *tabes mesenterica*, that is, of tubercular affection of the glands of the abdomen?"—The death is a melancholy fact that cannot be got over, but not necessarily the result of the milk.

4101. *Mr. Comrie Thomson*.—He died of *tabes mesenterica*.—Yes.

4102. And that is tubercular?—Yes.

4103. *Sheriff Berry*.—Your attention being called to that part of the question, does there not seem to be a connection between the death and the milk?—Yes, but not necessarily.

4104. *Mr. Jameson*.—The other two members did not die?—Apparently not.

4105. And for all that appears, it is quite possible that that death may have been caused by milk?—All things are possible. May 31,
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4106. At first, is tuberculosis looked upon as a local disease?—Dr. T. W.
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Unless experimentally brought into the circulatory system, I believe that it always begins with a local lesion.

4107. I see that Koch says on p. 193 of his book, “The bacilli remain for some time, perhaps permanently, in the place where they settle.” Do you agree with that?—Yes. I think that is the generally received opinion. An eminent witness on the other side, Dr. Coats, in his book says the same thing.

4108. Koch says that “tuberculosis in animals used for food, especially *perlsucht* in cattle, remains more or less localised, so that there would be no danger except in eating the tubercular lungs, glands, etc.” Do you agree with that?—Yes.

4109. Does that agree with a conclusion which I see in the *Edinburgh Medical Journal* for June, 1889 (this coming month), that they are going to say in a review of Dr. James’ book on “Pulmonary Phthisis,” p. 1124, “That this bacillus having found its way into a tissue, joint, lymphatic gland, etc., may remain there for years incapable of doing mischief, if the state of nutrition is good, and that the power for evil varies according to the amount of impairment of this nutrition.” Do you agree with that?—Yes.

4110. That agrees substantially with what Professor Koch says?—Yes, and all received authorities, except in the case of artificial inoculation into the circulatory system.

4111. In the great majority of cases, is the disease localised for a greater or shorter length of time?—Yes.

4112. And while so localised do you think it would be right to say that the whole carcase is diseased and unfit for human food?—I think it is most irrational to say so, because if it is localised it cannot be general, and if it is general, then it is a mistake to say that it is localised. The one excludes the other.

4113. Do you think it right to exclude from use of human food the carcasses of animals when the lungs may be locally affected with tuberculosis, merely because there is a risk of a bacillus or the spore of a bacillus getting into the flesh through the circulatory system?—For no reason. One may as well say that he would not go out of doors because a meteoric stone once fell and hurt somebody and killed him.

4114. You think that the risk is infinitesimal?—I am sure it is.

4115. Has there ever been a known case of tuberculosis in the human subject being traced to eating the flesh of a tubercular animal?—I have never heard of such a case, and I may say that there are a great many positive statements that experiments have failed to produce tuberculosis with such meat.

4116. These experiments have frequently failed?—Yes, and been very inconstant in their results.

4117. I believe that in the case of a person affected locally with tuberculosis in *post-mortem* it is often discovered that they have recovered?—Yes; the rule is that they recover from inoculated wounds.

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 Dr. T. W. Hime. 4118. But with tuberculosis in the lungs?—Yes; it is a common every-day experience in every large hospital. I have no doubt that in the Infirmary in Glasgow there are scores of records where they have seen such recoveries from tuberculosis of the lungs.

4119. Is it possible that these people were never the victims of generalised tuberculosis?—I believe it is an accepted fact they never recover from generalised tuberculosis.

4120. When it becomes generalised does it affect the consistency of the flesh throughout the whole body?—Yes; it always does.

4121. Makes the flesh soft?—Yes, and watery, and it is at once recognised by the colour.

4122. What is the colour symptomatic of tuberculosis becoming generalised—blue and discoloured?—It looks pale.

4123. And therefore you would think it a very strange thing if a gentleman came here and told us that the flesh being of a dark colour was symptomatic of tuberculosis becoming generalised in an animal?—Very strange things have been said in this case, and I would disagree with that gentleman.

4124. You have observed again and again, I suppose, this pale colour in flesh as a symptom of tuberculosis?—Yes, it is a general observation.

4125. Then you would not think of calling tuberculosis a blood disease in any sense of the word?—Except in that particular form of it. For instance, in the ordinary case it is not a blood disease in any sense.

4126. No bacilli are found in the blood of animals?—It is a most exceptional thing.

4127. And only in generalised tuberculosis?—Except where you have artificial inoculation into the blood vessels, and there you take it into the blood.

4128. Whenever it does become generalised and gets into the blood, is that followed in the living animal by emaciation and weakness?—If death is rapid it always wastes, and there is high temperature and febrile symptoms.

4129. Tuberculosis is most prevalent amongst children of an early age?—Yes.

4130. When very little meat is eaten by them?—Yes. The vast majority of cases is under five years.

4131. In addition to that, is it very frequently found among the poor, who eat less butcher meat than others?—Yes; it is also true that the animals that suffer most are the herbivora, that eat no meat at all.

4132. And they cannot get it through eating flesh?—No.

4133. Look at Koch's book, p. 191—"The second chief source of the tubercular virus, tuberculosis of domestic animals, seems to be by no means of such importance as phthisical sputum." Do you agree with that?—Yes.

4134. Then he says—"It would probably be more common if the visibly diseased portions of flesh were not, as is usual, rejected; or if, when eaten, they were not previously cooked in almost every case. Another point of importance to remember is that

“tuberculosis in animals used for food, especially *perlsucht* in cattle, remains more or less localised, so that there would be no danger except in eating the tubercular lungs, glands, &c.” Do you agree with the whole of that passage?—Yes.

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4135. And the conclusion which he arrives at is that tuberculosis from the eating of flesh of tuberculosed animals, cannot be assigned a place of any importance in the spread of tuberculosis?—I think everybody must admit that.

4136. Are similar opinions expressed by a French writer, Professor Cornil?—Yes, in the new edition of his work on phthisis. That book is “*La Phtisie Pulmonaire*.” The date of that edition is 1888. He is Professor at the Faculty of Medicine in Paris, and a very distinguished man.

4137. You are very well acquainted with French and German?—Yes.

4138. There is a passage on page 270, and this is your translation of it:—“Another question is whether the flesh of tubercular cows can give phthisis. It is very rare to find tubercles in the muscles and cellular tissue of the back and limbs, which are the most essential parts of the animal used for food; further, the inoculation of animals with infected meat has given variable results; but it is different with the consumption of organs such as the liver, kidneys, or parts containing lymphatic ganglia, hence the danger of eating boiled meat coming from suspected cattle.” Do you agree with that?—Yes.

4139. It goes on at page 294. “We repeat, that according to Koch, the danger of infection by domestic animals is not so great as one might think at first. The intestine, says Koch, is a medium less favourable than the lung for the development of the bacilli, for their contents are always in movement, and the secretion destroys the bacilli.” Then he goes on to say that sputum is the great source of the spread of tuberculosis?—Yes, that is recognised.

4140. Does he further go on to say that direct experiments rarely succeeded to produce tuberculosis,—“even where experts have endeavoured to produce tuberculosis by the inoculation of blood and meat from animals with localised tuberculosis, the results have not proved that it can be readily, and it must be well noted that the design in these cases was to produce the disease, and blood, meat, etc., was directly inoculated and not eaten, and thus subjected to digestion, which destroys the bacilli, and also not cooked. Cooking also destroyed bacilli?”—Yes; that is a question of fact—the enormous difficulty of producing inoculation by injecting meat of this kind, taken from a tubercular animal, and inoculated into the animal experimented on.

4141. Are similar opinions expressed by the Italian *savant* Nosotti?—Yes, and also by Wesener.

4142. Can you give me the dates of their experiments?—Nosotti’s article is in 1885. I have not brought with me the original copy of that journal containing the article, but the abstract of it is contained in a standard book which is here. That book is published in 1885, so that the article would be

May 31. written in 1884, I have no doubt. I cannot say about Wesener; he
 1889. is a German, and he is quoted in the same journal. The experi-
 Dr. T. W. Hime. ments were specially made for feeding purposes, with the view
 of testing them.

4143. Are you acquainted with the experiments of M. Nocard?
 —Yes.

4144. He is one of the most eminent experimenters?—He is
 a very eminent pupil of a very eminent man, Pasteur, and
 Director of, formerly Professor at the College at Alfort in France.

4145. What was the result of his experiments?—It was roughly
 this, that having injected meat taken from an animal suffering
 from an advanced stage of tuberculosis with the view of tuber-
 culising the animals, guinea-pigs, he took some of the blood
 out, and found the blood was not infective, and that the
 virus injected had been destroyed in the healthy animal's
 body.

4146. *Sheriff Berry*.—How long after the infective injection
 did he make the experiment about the blood?—In one instance
 the animal was inoculated on 6th November, 1887, at eight
 o'clock in the morning, and at mid-day on the same day the
 blood was taken, and the animal was killed three months after-
 wards and was found perfectly free from tubercle. In another
 case, instead of injecting it into the blood, he injected it into the
 muscle, still with the view of testing what the muscle would do.

4147. What was his object in taking the blood from the
 animal?—To see whether the blood has been capable of destroy-
 ing the virus or not. In this other case he injected it into the
 muscle and found that after six days the tubercular material
 which he had deposited in the muscle had lost its virulence.

4148. *Mr. Jameson*.—I think in all he inoculated in the peri-
 toneum some 13 guinea-pigs with the milk of tubercular cows,
 and 15 with the juice of tubercular meat, and 27 of these
 remained perfectly healthy, only one becoming tubercular?—
 Yes, that animal had been inoculated with the milk from a cow
 in a terrible state of generalised tuberculosis. The cow died in
 48 hours afterwards of generalised miliary tuberculosis. The
 cow was *in articulo mortis* on the very day the milk was taken.

4149. And besides that its udder was locally affected with
 tuberculosis?—Yes.

4150. All the other animals were inoculated from animals
 plainly suffering from the disease?—Yes, all of them.

4151. Nocard draws this conclusion, that milk and meat can
 never be infective unless the animals they are derived from suffer
 from generalised tuberculosis, more particularly the udder being
 infected?—Yes; he has maintained that position from the experi-
 ments he has made.

4151-1. Professor Baumgarten says in his work on Pathological
 Mykology, published 1889:—"The fact of the rare occurrence of
 "primary tuberculosis of the digestive tract is explained, without
 "any contradiction of the experiments, if we consider that for the
 "occurrence of primary tuberculosis of the digestive organs in man
 "there is very little inducement. The principal danger in this direc-

tion arises from the flesh, and especially the milk, of tuberculous animals. But, as the flesh and milk are largely eaten cooked (the author is referring to Germany), and boiling for several minutes, as we know, destroys with certainty the virulence of the tubercle bacillus, there only remain as sources of danger uncooked meat and milk. Now, from these the meat may *almost completely* be eliminated, as it is hardly likely that anyone will eat meat containing tubercular nodules; and *the consumption of meat free from nodules, according to existing experiments, may in general be regarded as harmless.*" Further, page 753—"Meat from tuberculous animals which is free from tubercle could only contain tubercle bacilli in the blood remaining in it. But the blood of tuberculous animals (or men), according to experiments by the author (*Zur Contagiosität der Tuberkulose, Centralbl., f. d. med. Wissensch.*, 1881, No. 15), specially made on the subject, and since then frequently verified (Schuchardt, Weichselbaum, Bang, *u.A.*), only contains detectable bacilli in acute general miliary tuberculosis, and then in such small quantities that their presence can usually be ascertained by inoculation experiments, but not by microscopic examination. Hence, meat free from tubercular nodules only exceptionally contains any bacilli, and can scarcely ever be infectious, owing to the exceedingly small number of bacilli present, at least so far as it is consumed as food. Not only the experiments on animals support this view, but also the statistical results brought forward by Reubold and Häcker (*Schottelius, Zur Kritik der Tuberkulosis-Frage Virchow's Archiv.*, bd. xci., 1883, heft 1), according to which men have eaten tubercular meats for years."—I agree with that; and the author is, next to Koch, perhaps the greatest authority on tuberculosis.

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4151-2. Professor Uffelman, of the Hygienic Institute, of the University of Bostock, says, in his work on Public Health, 1889, p. 191—"Further, the following "diseases may be acquired by means of meat:—Anthrax, glanders, tuberculosis, but the last only when the meat itself contains tubercular nodules or is derived from an animal suffering from generalised tuberculosis."—I agree with what he says entirely.

4151-3. And do you agree with what Professor Dujardin-Beaumetz of Paris says in his work on Prevention of Disease, referring to tuberculosis, 1889, p. 197, line 18?—"Has this possibility of the propagation of tuberculosis by means of the flesh of tubercular animals been really demonstrated? The experiments on this point are decidedly contradictory; while Nocard, making intraperitoneal injections in a series of twenty-one guinea-pigs with the juice of the flesh of twenty-one cows manifestly tubercular, only had one positive result, and Galtier had 5 positive results in a series of twenty-two. Whilst Arloing argues for the danger of this meat and for its wide extension, Nocard, on the contrary, considers the fact as absolutely exceptional. I am disposed to adopt the latter view entirely; in fact, in the experiments just used, the meat juice was introduced directly into the peritoneum, and was not subjected to the destructive

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 "had not been cooked in any way, and hence these experiments
 "do not realise in any way the conditions of ordinary alimenta-
 "tion." The author sums up on page 198, lines 16-21, after
 giving figures to show that tuberculosis in animals is much more
 common than supposed—"Thus, then, owing to the rarity of
 "tuberculosis in animals, to the destructive action of gastric and
 "of intestinal digestion, and lastly to the cooking of our food,
 "this possibility of contagion is reduced to a minimum, and the
 "facts of this transmission is reduced to a case absolutely ex-
 "ceptional."—I entirely agree with the opinion of this great
 authority, who supports the view of all authorities I have ever
 read or heard of, both governmental and professorial.

4152. Is there any country, so far as you know, where there is
 a law enjoining the total destruction of a carcase owing to its
 being affected with localised tuberculosis?—No; that happy land
 has not been discovered. It is an undiscovered country.

4153. There are some places, in the shape of Greenock, Edin-
 burgh, and Paisley, yet in the wilderness of ignorance on this
 subject?—Yes, the *Ultima Thule*. It is only fancy. They will
 return to their first love, I have no doubt, before long.

4154. Do you think that any such law should be passed, so far
 as your opinion goes?—It is most unnesessary; facts and logic
 prove this.

4155. You think it is a waste of good food?—It is a waste of
 food.

4156. I think you made some enquiries into the laws of various
 countries on this matter?—Yes, I made special enquiries as to
 the practice in different countries.

4157. With regard to Prussia what is the law?—The Prussian
 law is that if the carcase is in an advanced stage of tuberculosis
 the whole of it is condemned and destroyed, but if partially, the
 diseased part is cut off and the carcase sold, and if there is
 any doubt about a part it is marked and sold at a cheap rate.

4158. *Sheriff Berry*.—So that the buyer knows what he gets?
 —Yes.

4159. *Mr. Jameson*.—In Prussia great care is taken in in-
 specting meat?—I believe there is no country that is more
 advanced in this respect.

4160. And in Berlin Professor Koch is one of the Sanitary
 Council?—He is the Gesundheits Rath.

4161. There are 138 persons engaged officially in inspecting
 meat in Berlin alone?—Yes, including several medical men,
 veterinary surgeons, and a microscopist.

4162. Have you the provision of the code?—Yes. It is dated
 27th June, 1885, and I make the following translation: "The
 "condition of the flesh of a tubercular animal is to be regarded
 "as dangerous to health when the meat contains tubercular
 "nodules, or the tubercular animal has begun to show emaciation,
 "even although the tubercular masses are not visible in the
 "meat; while, on the other hand, the meat is to be regarded as
 "fit for food when the masses of the tubercle only occur in an

‘organ, and in general the beast is well nourished.’ The law was supplemented by one in 1887. I have also a letter from the inspector himself explaining the practice. He writes to me on 23rd May of this year. This is a letter from the gentleman whose name is Feirabend, and he is inspector at the city central station slaughter-house, Berlin. I have not the letter which I wrote. I asked him what was the practice in the case where there was obvious tubercle in a limited quantity in the animal, when so far as could be judged the animals were in good health; and also animals when suffering from generalised tuberculosis; and the following is the translation of his reply:—
 “Those animals in which the disease has become general, that is to say, has spread over the whole body, or in which the glands are involved, in that pathological condition are entirely destroyed. In the case of other animals, only the affected portions are destroyed. The still healthy flesh is passed for human consumption. Any further inquiries will be gladly answered.”

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4163. *Sheriff Berry*.—As I understand, this is the law of 1885?—Yes, and it is still in force.

4164. *Mr. Jameson*.—Under these regulations do you think the cow and bullock we are dealing with in this case would have been passed?—Yes, they would have been turned into good flesh and blood long ago.

4165. Without any hesitation?—Without a moment’s delay.

4166. I think your attention has been drawn to some statistics given by Hertwig, and which we had from Professor M’Fadyean, when, in the Berlin meat survey for 1888, he says that “8322 organs, or parts, were withheld from consumption while the remainder were passed?”—I have seen several statistics of a similar kind.

4167. In Saxony do you know the rule?—The law is the same there. I have a letter from the inspector at Dresden, and he tells me that it is the same—that they destroy only the infected parts when localised, and the whole carcase when generalised.

4168. You also inquired as to the practice in Bavaria?—From Munich, I have a letter from the inspector, telling me what the law is; and an interesting letter from the hygienist Professor von Pettenkofer. I happen to know him personally, and I thought I would get the information direct from him rather than write to the inspector, whom I did not know.

4169. Is that the practice in both of these places?—Yes.

4170. In Brussels do you know what is the practice?—It is the same there. The localised disease is treated in the same way, and the affected parts are destroyed.

4171. You made inquiry of M. Van Hertsen, who is the chief inspector of the public abattoir?—Yes.

4172. He is the joint author with Mr. Fleming of the book that has been quoted?—Yes—a very valuable book.

4173. The meat is passed when the disease is localised, and the meat is destroyed when generalised?—Yes.

4174. In Hamburg do you know the practice?—It is the same there also. I have received information from the head of the

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Dr. T. W. Hime. 4175. Is the law in the Grand Duchy of Hesse also the same? —Yes; I believe it is the same all over Germany.

4176. Coming to France, there has been that decree that we have heard about; have you got a copy of it?—Yes, in French; and I believe it is here in English.

4177. Under the French decree, what do you think would have been done with the bullock and the cow in question?—I have not the slightest doubt that they would have both been passed.

4178. The decree does not suggest the microscopic test at all? —No; it is intended for every-day practical life, and not for laboratory work.

4179. You are quite sure about the cow being passed under that decree, or would there have been some difficulty about it?—Yes; I think, interpreting the second section by the spirit of it, it would have been passed.

4180. The spirit of it being that where the flesh was sound and healthy the animal should be passed, even although there was tubercular disease?—Yes.

4181. And is the practice that is given effect to in this decree the same as you have acted on throughout as medical officer in the towns you have mentioned?—Not only I, but in all the large towns in England it is the general custom, and I am glad to say in Scotland too.

4182. Did the Sanitary Congress in Brussels in 1883 expressly sanction the use of the flesh of animals that were merely locally affected by tuberculosis?—Yes.

4183. And the Health Congress at the Hague in 1884, I think, affirmed the same thing, the propriety of using the flesh, if good, of animals locally tuberculosed?—Yes, with a discretionary power left to the inspector.

4184. We have heard a good deal here about the Congress at Paris in 1888?—Yes, the first they had.

4185. I suppose it was a respectable assemblage of persons interested in the subject of phthisis?—I should say there were two or three generals, and there was a great crowd of camp-followers.

4186. Including a representative of Great Britain, in the person of Mr. Robinson of Greenock?—Oh, of course.

4187. You have examined the report of that Congress?—Yes, I have been grinding it up.

4188. And you have read the speeches?—Yes, I have been suffering that too.

4189. Were there very diverse opinions expressed throughout the whole of that discussion?—Yes; there were some papers that were of the most utterly worthless character, and there were some very high-class.

4190. I see a M. Arloing spoke at that Congress?—Yes.

4191. He approved of partial destruction at the Congress of 1885?—Yes, and then he finds salvation, and he alters his mind.

4192. In 1888 he altered his mind, but does he not, in the same speech that he makes there, admit that the danger is slight? —Yes, he says it is only in an extreme case where there would be any danger. He expressly says that the danger is very slight. May 31, 1889.
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4193. Then, I think M. Galtier of Lyons, whom we have heard of already in this inquiry, spoke to this effect, that the ingestion and inoculation of the juice of meat from phthisical animals in man has frequently negative results?—Yes, he says so in his paper read at the Congress.

4194. I think it is also stated, on page 111, that the commission appointed by the mayor of Lyons reported in favour of partial destruction only?—That is so. That was in 1883, but the reporter of that commission did not agree with the Commissioners.

4195. Who was the reporter?—M. Aureggio.

4196. And who were the members?—MM. Saint Cyr, Cornevin, Galtier, and Quivogne.

4197. The reporter was the gentleman under whom Mr. Robinson studied?—Yes.

4198. At p. 130, M. Van Hertsen, from Brussels, and M. Van Siegen, from Luxembourg, state that the danger from tuberculous meat was greatly exaggerated?—Yes.

4199. M. Chauveau, whom we have heard of here, gave as his opinion, I think, that the virus of tuberculosis was never in vaccine lymph (page 157)?—Yes.

4200. The inference from that is, is it not, that it is not in the blood?—I think that is a very strong and interesting illustration of its absence from the blood. If it was in the blood you would be bound to have it in the lymph which has exuded in the vaccine vesicles, and he is not the only one who has made that observation. There are still stronger experiments made of this kind. Persons in an advanced state of consumption have been vaccinated with the view of examining the vaccine lymph and to see whether there was any tubercular bacillus in it, and it has never been found. All such experiments have been blank.

4201. I think there were other expressions of opinion to the effect that it was not a blood disease?—Yes, very strong opinions against destroying the whole carcase. The vote, however, when it came to the vote, seems to have been rather in favour of total seizure.

4202. *Mr. Comrie Thomson.*—It is about 3 to 300; I should say that was rather in favour.

4203. *Mr. Jameson.*—Do you know about the vote?—The fact is this—there were a number of gentlemen of very high standing who read papers strongly opposed to total seizure, but when they came to the voting, for some reason or other, I suppose, they did not trouble themselves about voting. Their papers, however, are here in print expressing themselves totally against total seizure, but in the voting only three voted in the minority. I don't know how many voted in the majority.

4204. *Sheriff Berry.*—Who were the minority?—The names of the minority are not given.

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4205. *Mr. Comrie Thomson*.—It is said to be M. Nocard and other two.
4206. *Sheriff Berry*.—M. Chauveau was not among them?
4207. *Mr. Comrie Thomson*.—No; I have something to say about M. Chauveau.
4208. *Mr. Jameson*.—Now, have you examined the Registrar-General's tables for Glasgow?—I have. I have very carefully gone into the question of tuberculosis in Glasgow.
4209. And you have been informed about the practice as to tuberculous animals here?—Yes. I expected to find a great number of deaths from tuberculosis in one form or another, but I am glad to say that Glasgow is in a very satisfactory position, and is improving every year, there being a great decline in all forms of tuberculous disease.
4210. And if there had been communication by means of tubercular meat, through letting considerable quantities of it pass, you think that probably that would have shown itself in the keeping up of the number of consumptive and other cases?—That conclusion is absolutely unavoidable. The consumption of meat is increasing. People are eating more and more of this so-called deadly poisonous stuff, and yet, in place of dying more and more, they are dying fewer and fewer from that disease; and that is not only the case in Glasgow, but in all the larger towns in England and Scotland where the same custom prevails as has prevailed here up to the other day.
4211. Do you think it would lead to the diminution of tubercular disease generally if the carcasses of all animals, however slightly affected with tuberculosis, were to be destroyed and not used for human food?—Well, practically speaking, I do not believe it would. I am satisfied it is not one of the great causes which lead to the numerous deaths from tuberculosis.
4212. There are hundreds of other causes, I suppose, much more important?—Yes.
4213. And what do you think about the effect of such a practice in raising the price of meat?—Well, I am afraid that in this way it would be a very great hardship on the poor, because everybody, of course, cannot buy beef at 14d. and 16d. per lb., and if the inferior quality of meat or suspected meat of that kind is not allowed to be sold, I believe it would be, generally speaking, a great hardship upon the poor people who necessarily must buy cheap meat, and, indeed, meat of this character. I don't call it bad meat because it is cheap, but I think it would be downright extravagance and waste to destroy a carcass such as that bullock which I saw in the slaughter-house.
4214. And I suppose the more butcher meat, and the cheaper poor people can get it, the more they will be enabled to resist tuberculosis and other diseases?—Quite so.
4215. Then there are one or two general points I wish to ask you about. Are what are called giant cells peculiar to tuberculosis?—Certainly not.
4216. Are they just as suggestive of cancer and many other diseases?—Every bit.

4217. Does a tubercle without the bacillus show the presence of tubercular disease, do you think?—A tubercle may contain no bacillus. The bacillus may become destroyed inside the tubercle, and the tubercular virus may have gone, so far as infection is concerned, supposing that the spores are also gone.

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4218. I think experiments have been tried by inoculating the eye with tuberculosis?—That is a favourite experiment.

4219. Dr. Coats, who was examined here, had some of these experiments in his book?—Yes.

4220. It has been found that the tuberculosis may confine itself to the eye?—Yes, and be distinctly limited to that spot.

4221. Have you got his book here?—Yes, it is a very valuable book.

4222. Look at pages 166 and 167 of his *Manual of Pathology*, edition 1883. He says there: “The bacillus must be allowed to tarry in the part, and subsequently it may grow and spread”; and again, on page 167, “The virus may get into the blood, and does not develop unless it finds some part of the body fit for its reception.”

4223. *Mr. Comrie Thomson*.—I wish to bring under your Lordship’s notice that this matter should have been brought under Dr. Coats’ notice.

4224. *Mr. Jameson*.—I think that observation is quite right; I should have done it if I had had the book.

4225. *Sheriff Berry*.—Then you will understand that this is taken with that observation.

4226. *Mr. Jameson*.—Certainly; it is only fair to Dr. Coats. (To witness) Then generally, in your opinion, the disease of tuberculosis is at first, and for a long time, entirely local?—Certainly.

4227. And may remain local throughout?—Undoubtedly.

4228. Has experiment proved that you cannot inoculate an animal with tuberculosis by simply using meat from another animal suffering from local tuberculosis?—Its success is very varied. I have referred to various cases where that has been unsuccessfully attempted.

4229. That is by inoculation?—Yes.

4230. Has the experiment ever succeeded in inoculating an animal with sound flesh taken from another only locally affected with tuberculosis?—I know of no such experiment.

4231. And the general practice, both abroad and in this country, is to allow the carcase, otherwise healthy, of animals locally affected with tuberculosis to pass?—That is the general common-sense practice.

4232. And that is sanctioned by the highest authorities on this subject, both in this country and on the Continent, some of whom you have mentioned in the course of your examination?—Yes.

4233. Is it your opinion that any practical good would be effected by following the stringent practice of throwing away the meat of animals, however slightly affected with tuberculosis?—I really think the effect would be infinitesimal, if anything. Where

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4234. Would you have any hesitation yourself in eating the flesh of either this cow or bullock?—Not one moment's hesitation. I would be very glad if they would supply me with similar meat to that all the year round, at a reasonable price.

4235. Did you make a microscopic examination of the flesh of the cow and the bullock at all?—I did.

4236. With what result?—In the case of the bullock all my efforts were negative. I found nothing in the bullock, although I made a great number of sections.

4237. From what parts of the bullock was the flesh taken that you subjected to these microscopical examinations?—I examined particularly the gland from the interior of the thigh, the "pope's eye." I examined portions of the muscle itself, the meat; I examined part of the lung, and I examined the liver and kidneys. I think that is all.

4238. What about the cow?—In the cow I found plenty of bacilli.

4239. In the lungs?—In parts of the lung; and in parts of the lung I did not find any. A part of the lung was certainly perfectly healthy—healthy to the naked eye, and healthy when examined with the microscope. I also examined the meat—several samples of the muscle. I examined a similar gland from the thigh. I examined a part of the kidney and udder. I had at least five pieces of udder cut from different places, and I made a number of sections from each. I examined the uterus, and except in the lung, I did not find anything.

4240. If the disease had become generalised in the cow, would you have been certain of finding bacilli in one or other of the organs, or of the different portions of organs, which you examined?—I think it is absolutely certain I should have found them.

4241. Because those portions that you examined, such as the kidney and the liver and the udder, are just the places where, in the case of generalised tuberculosis commencing with the lung, you would expect to find tuberculosis?—Yes. I did not expect to find them in the kidney, for it was perfectly fresh and healthy looking, but it would have been very natural to find them there if the animal was suffering from anything like general disease, and I think I could not have failed to find them if they had been there.

4242. What proportion of the whole lungs of the cow was affected with tubercle, as compared with the volume of the lung?—That is rather a difficult question to answer, because during life the lung is expanded, and when I saw it it was contracted and very small. It had been in the refrigerator for some time. I don't think, if it was all put together, that one-tenth part of it

was affected, perhaps a tenth or an eighth. I would like you to understand that it was not a large part. May 31
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4243. And then the bullock's lung was all right?—The bullock's lung was perfectly healthy. Dr. T. W.
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Cross-examined by *Mr Comrie Thomson*.

4244. How long is it since you held the office of a medical officer of health?—Twelve months ago.

4245. That was in Bradford?—Yes.

4246. You still reside there?—Yes.

4247. As a general practitioner?—Yes, and sanitary adviser.

4248. To whom?—To anybody who employs me—to the gentlemen who have employed me in this case, for instance.

4249. You act for any one who employs you?—Yes.

4250. You have no official position?—No.

4251. Your connection with the authorities in Bradford was terminated about twelve months ago?—Yes.

4252. But I gather from the tone you have assumed that you consider yourself an authority upon this subject?—Well, I am not going to underrate my own capacity.

4253. I don't think you are—kindly answer my question. Do you consider yourself an authority upon this subject?—Well, that sort of question is not pleasant to give an answer to.

4254. Are you a general or a camp follower?—I would rather you would judge of that.

4255. But I am using your own expression. You said of that congress in Paris that it consisted of a few generals and a number of camp followers. Which are you in this inquiry?—Well, I should rather be on the general staff, certainly.

4256. And you consider yourself on the general staff?—I hope for promotion, at all events.

4257. And you are so recognised, I presume, in England?—That I cannot say.

4258. I will tell you why I am asking you the question, because I find that there were forty witnesses and more examined by the Privy Council Commission, and I don't find your name on the list?—That is certainly a misfortune.

4259. That is their misfortune, I presume, you mean?—Yes, and a great many other great men were not there either.

4260. Were you invited to give evidence?—No.

4261. It was not suggested to you that the Privy Council desired your advice?—It may have been suggested to the Privy Council for anything I know.

4262. But it was not suggested to you?—No.

4263. There were some great men among those who were examined, were there not?—Will you show me the report?

4264. I will give you a name, or I will give you two names—take Sir Charles Cameron for one?—I know him very well, indeed.

4265. He is a man eminent in science, and especially in this branch of it, is he not?—Not at all.

4266. What eminence has he?—He is a very eminent chemist.

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Hime. 4267. But you notice that he was examined before the commission with reference to this matter?—Yes, but men are not selected to be examined before a commission entirely on account of their fitness.

4268. Are they not?—No; not at all.

4269. Why does the commission employ them?—For various reasons. Generally speaking, their names are suggested by somebody, and then they are employed.

4270. Is it not the case that when a government department appoints a commission to inquire into an important public question it endeavours to get as much information and from the best sources that it can?—That is a matter of opinion.

4271. You don't agree with that?—It is a matter of opinion.

4272. On what theory do you suppose a public commission proceeds in collecting evidence?—That I cannot say.

4273. Do you mean, sir, to contradict my suggestion that a departmental commission always does its best to have the most eminent witnesses that it can?—I think this—the Commissioners know by repute, or personally, certain gentlemen whose views they would wish to hear. I suppose they are human, and the probability is that the majority of them suggest those whose opinions they value most, but it does not follow that these are the best opinions that can be got. They are the opinions of gentlemen known to certain parties who wish to have these opinions put forward, and they succeed in bringing forward men whose opinions on the matter to be inquired into they want to have made known.

4274. In fact, the evidence at these commissions, in your opinion, is all jobbed?—It is proved by experience that, as a rule, Parliament does not care one jot for the reports of commissions. Experience has proved that over and over again.

4275. Then you attach not one jot of value to the report of this commission?—I don't say that at all.

4276. You said Parliament did not?—I said frequently it did not.

4277. Then you know by repute the gentlemen who were examined before this commission?—Some of them.

4278. Are they men of distinction?—Some of them very much so; one or two of them are in Court now.

4279. Mr. Lingard?—I don't think Mr. Lingard is a man of much practical experience, as far as I know.

4280. Perhaps you will tell me whom you consider a person of distinction among them?—Is that a question for me to answer?

4281. Are not Sir Charles Cameron and Mr. Lingard the most eminent men in their profession?—Has that anything to do with the character of the carcase down at the slaughter-house? It is a question that seems to me very remote from the character of the meat.

4282. Will you kindly answer the question?—Subject to his Lordship's ruling.

4283. *Sheriff Berry*.—There is no objection to the question.

4284. *Mr. Comrie Thomson*.—I ask you if Sir Charles Cameron

and Mr. Lingard are not two of the most eminent men in their profession?—I don't think Sir Charles Cameron, in a question of tuberculosis, is really an authority, although he is a great friend of mine. May 31,
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4285. And what about Mr. Lingard?—He, I think, perhaps as an experimentalist, is a skilful man.

4286. Mr. Cope, you are aware, is at the head of the veterinary department of the Privy Council—perhaps that is jobbed too?—His appearance before the committee might have been brought about by influence of that kind.

4287. Would it not occur to you that a man who has for some years been at the head of the veterinary department of the Privy Council is probably a man of experience and capacity?—Quite so.

4288. You grant me that?—Yes.

4289. Then let me hear those of the 43, I think there were, who you think gave an opinion that is worth listening to?—There is Professor M'Call.

4290. That is the gentleman who was examined here yesterday?—Yes.

4291. Then there is Professor M'Fadyean?—A very able man.

4292. He was examined here yesterday also?—Yes; I read his evidence with great care.

4293. Then Dr. Littlejohn has been for some time a medical officer of health, as you know?—Yes, a very experienced medical officer; but I think that on this special question——

4294. He has gone wrong?—He is like Homer—he sometimes sleeps.

4295. And all those gentlemen who differ from you are sleeping Homers?—Of course they are.

4296. Then, to turn to the constitution of the commission, I think you will grant me that there were two men on it, Dr. Brown and Mr. Horsley, who are persons of some eminence in science?—In some departments they are. Mr. Horsley is very distinguished.

4297. And Professor Brown?—I don't know. I know that he is at the head of a department, but really what his knowledge and experience are as to this special subject I don't know.

4298. But presumably the Privy Council would get the best men they could to conduct such an inquiry?—It does not follow that a gentleman sitting in an office in London is a man of much experience in practical work, such as the character of meat, and what ought to be used for human food, and other questions of that kind. There is no necessary consequence of that kind at all.

4299. Are you aware that Professor Brown is the principal adviser of the Privy Council in veterinary matters?—I am, and I have advised Professor Brown.

4300. That accounts for his eminence probably. Do you recognise a friend in this little book [showing book titled "Handy Guide to Public Health"]?—Yes; I am the author.

4301. I am going to read to you what you wrote in it in the year 1884, page 139: "There are many conditions which should

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4302. That will save me a good deal of cross-examination, I think?—I am very pleased to hear it.

4303. Now, I wish to recall to your recollection, because I have no doubt you have been taking an interest in the proceedings here for the last few days?—No, you have not let me in.

4304. But they were published in the newspapers?—It was mostly the one side, I think, they published.

4305. That is a matter the reporters will settle with you. However, you will be good enough to assume that this is a correct report. Mr. Robinson, the gentleman at whom you had a sort of sneer, said this, that he took specimens of the bullock from the body for minute treatment. His examination (I read from the newspaper report) was as follows:—"From what part of the body did you take the specimens for minute treatment?—From the diaphragm and the dorsum of the left lung. I also took some from the mesenteric glands from the alimentary track. What did you find upon microscopic examination?—I found a quantity of giant or enlarged cells." This was of the bullock. What did you find upon microscopic examination?—I found a quantity of giant or enlarged cells; proliferation or multiplication, repeated bisection and trisection of the lymphoid cells, suggesting irritation of the part. Giant cells suggest the presence of tubercle histologically. What else did you see?—I found a number of bacilli—tubercular bacilli. Were you quite clear what they were?—Undoubtedly. There were no other bacilli of the same dimensions and character. Did that satisfy you as to what the true cause of these nodules or tubercles was?—Yes, the presence of these bacilli; and that they were the result of tuberculosis. I took portions separately from both animals, and I found appearances in both animals. Of course,

"the lesions were not identical in both." Now, assume that what that gentleman states is true, does that not show that you were mistaken in saying that there was nothing wrong with the bullock?—Well, after all that proliferation and multiplication and triplication, one should be frightened, still that is not evidence.

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4306. Observe my question; it is that, assuming that statement to be true, does that not indicate to you that you were mistaken in saying that there was nothing wrong with the bullock?—If this gentleman found the bacillus and I did not, then of course I did not.

4307. That is no answer to my question: you are only wasting time. Does it not show that you were mistaken in saying that there was nothing wrong with the bullock?—That there was not a bacillus in the bullock.

4308. Then there is something wrong with a beast that has got a bacillus in it?—No. There might be a bacillus, or thousands, in a bullock, and yet it might not be wrong.

4309. But that part of it where the bacillus was would be wrong?—No, that does not follow at all.

4310. Then I understand that the presence of bacilli in an animal is a comparatively trifling matter, in your opinion?—It depends upon the time during which the bacilli have been there, and whether they have developed, and whether they have secreted their natural secretion—whether they are dead or alive; all sorts of things have to be taken into consideration.

4311. Here is what another witness says, Mr. M'Geoch—"I examined the lungs and lymphatic glands of the cow. They exhibited tubercular deposit. I also examined the bullock in the chest and part of the diaphragm. There I found tubercular pleurisy. I found tubercular nodules in the walls of the chest of the bullock. I removed one of the prepectoral glands embedded in the fat, for microscopic examination. It was about eighteen inches from the part of the chest which manifested tubercular lesions. I looked at the prepectoral gland. It was inflamed and congested. I was of opinion that the animal was suffering from tuberculosis. I assisted Professor Limont to prepare specimens from the gland for microscopic examination. What did you see under the microscope?—I saw the bacilli stained red." If that statement is true in point of fact, does that not show that you were mistaken in saying that this animal was not suffering from tuberculosis?—Yes; Professor M'Fadyean, your witness, and I are both in the same boat in that matter.

4312. It shows you were mistaken in saying that the bullock was not suffering from tuberculosis?—No.

4313. Is that not so, if there is found in one of the prepectoral glands tubercular nodules and in the walls of the chest tubercular nodules?—I beg your pardon. Undoubtedly that animal was suffering from tuberculosis.

4314. Then if this is true as matter of fact, this bullock was suffering from tuberculosis?—Yes, and it must have been very bad with it, if all that is true, but it is not true.

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4315. I am asking you to assume that Mr. M'Geoch is telling the truth?—I will assume anything you like.
4316. It is not a matter of opinion?—It is.
4317. No; notice the difference. There is ample toleration for differences of opinion, but I have no tolerance for a statement that a man is not telling the truth about what he sees or does not see?—I don't suggest that for a moment. You are imputing things to me I would never think of for a moment, either to say that Mr. M'Geoch was telling what was untrue, or to sneer at Mr. Robinson.
4318. This is not Mr. Robinson; this is another gentleman?—I never intended to express any disregard for their views.
4319. But if this gentleman is accurate in his observation, you were mistaken in saying that the bullock was not suffering from tuberculosis?—Without a doubt.
4320. Then I read you from the evidence of Dr. Littlejohn—
“On the carcase of the bullock there were deposits of tubercu-
“losis; no one could make any mistake about it. I made a
“section in the flesh and found it in a most unsatisfactory state.
“It was deficient in colour and consistence. It was soft, and
“had I seen that flesh alone, without knowing anything about
“the carcase, I would have suspected the presence of disease of
“some kind. There was iridescence which has again and again
“attracted my attention in these cases; in my experience it is
“generally associated with previous illness. On the lungs and
“wind-pipe, I found an undoubted group of recent tubercle.”
Now, you have told us that Dr. Littlejohn was a very experienced and eminent man in this matter?—No, excuse me, I did not.
4321. You said something complimentary about him?—In certain departments of his public work, he is an eminent authority.
4322. Will you tell me anybody that is as good an authority as yourself?—I am not comparing him and myself; that is a very invidious thing to say.
4323. I ask you, assuming that these observations of Dr. Littlejohn are correct in point of fact, does that also go to show that your examination must have been very misleading?—I could not assume that that is correct.
4324. *Sheriff Berry*.—But if it is a correct statement of what Dr. Littlejohn said, the question is, what is your opinion of the animal?—If that was correct, the animal would be diseased, but it was not correct at all.
4325. *Mr. Comrie Thomson*.—Will you notice the question and not waste our time—if this be true, what is your opinion of the state of the animal?—If that thing is true, although it is not true, then the animal was diseased.
4326. Are you aware that, in saying these things, you are charging Dr. Littlejohn with perjuring himself?—I beg your pardon, I am charging him with a mistake to which all human beings are liable.
4327. *Sheriff Berry*.—It is enough to say that if it is true, then the animal was diseased.

4328. *Mr. Comrie Thomson*.—Then here is one other observer, Dr. Wallace, the medical officer of Greenock. He says:—"In the lung of the cow I found abundance of tubercular matter in a state of softening. In the lung of the bullock I found a small tubercular mass about the size of a small horse-bean, and on cutting into it I found it was in a state of caseation—a cheesy condition. It was a tubercular nodule. I found another nodule about the same size surrounding a vein. The animal had been suffering from tuberculosis." Now, if that also is true, the animal was diseased?—If that is true.

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4329. Well, I have read to you the statements of four gentlemen holding responsible public positions, and having heard these statements, are you prepared, sir, to face up to the opinion you expressed a little ago, that the bullock was a perfectly sound animal in every respect?—I am prepared to face up to every word I said, and to maintain that that animal was fit for human food, and was not a tuberculous animal.

4330. That is not the question. I ask you whether it was perfectly sound in every respect?—Perfectly sound in every respect, as I, by a naked-eye examination, and by microscopical examination, by going into the thing carefully from one end to the other, was able to ascertain.

4331. Then how do you account for these four gentlemen making the statements that they did?—It is unaccountable, except on this ground that these gentlemen saw the animal in an earlier stage than I saw it. I saw it at a later date.

4332. When did you see it?—I saw it on the 16th.

4333. Dr. Wallace, the last witness that I read from, saw it on the day after that, so that won't account for it?—No.

4334. Then you cannot account for it?—I can, in this way. When I saw these remains again about four days ago, I found that there was a very great mixing up of parts that had been separated from the animal, and it is just possible that there may have been a confusion in some of the parts. One, for example, may have got mixed up with the other. That is the only possible solution I can give for it.

4335. That is your idea, and it may, of course, have happened in your own case?—With some of the organs it was possible, but not with all.

4336. It may have happened in your case?—There was only one udder; there was only one cow.

4337. The bullock would have no udder, I grant you that?—No.

4338. However, I leave that. Now, you seem to attach some importance to the fact that the lungs floated?—Very little—some importance.

4339. Very little—not worth speaking about?—It is not to be assumed to be an accurate test of the existence of tuberculosis.

4340. There I agree with you; it is a pity you mentioned it?—No, it is not.

4341. Then I must clear it up. There were portions of the lungs which contained tubercular nodules?—Yes, but none of the meat.

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 Dr. T. W. Hime. 4342. Of course, if they had all come into that state, they would not have floated; if they thicken like that they will sink? —Certainly.

4343. But if they are only partially nodulised like that they will float?—Of course, it is only an indication of whether there is an advanced general condition of tuberculosis in the part.

4344. In fact, it is a question of degree?—A question of degree.

4345. And what you say is that the disease had not advanced so far in this case as to destroy the power of floating?—That is one thing.

4346. Now, I gather from your evidence that you adopt the theory that tuberculosis is produced by a specific organism or bacillus?—There is no doubt about that.

4347. And do I understand you to hold that the bacillus or its products are capable of being moved from one part of the body to another?—Undoubtedly.

4348. By the glands—by the lymph stream?—Yes.

4349. Are you able to say that it may not be by the blood stream as well?—It may be by the blood stream, undoubtedly, and by other means too.

4350. Would you sanction the sale of a piece of flesh in which you knew bacilli to be present?—It depends entirely upon the condition in which the meat was.

4351. I am giving you that; a bit of meat in which you knew that there are bacilli, and you see no more harm in it, would you sanction that to be sold as food?—Healthy meat?

4352. No, meat with bacilli?—Well, but how have these bacilli been discovered?

4353. I am asking you to answer me the plain question?—I cannot answer the question.

4354. If you knew that there were bacilli in a piece of meat which had otherwise apparently nothing the matter with it, would you sanction the sale of it for food; would you eat it?—If I knew that there was a bacillus introduced into a piece of meat which had previously been without bacilli, and which was perfectly healthy, and if I knew that that piece of meat was going to be cooked properly, I would not hesitate to eat it.

4355. That is no answer to my question; would you let it be sold?—That was one of the questions you asked.

4356. It is not an answer to my question,—if you had a piece of meat with a—I do not limit it to one—but with bacilli in it, would you sanction its sale for food?—I cannot answer that question as it stands, because I must have the conditions under which the bacilli were found there, whether they were the result of tubercular degeneration in the meat.

4357. Take it as the result of tubercular degeneration in an adjoining piece of meat?—I should not have the least hesitation about it if the carcase was otherwise healthy.

4358. Then you see no danger in the introduction of tubercular bacilli into a man's stomach?—That depends entirely. It may be dangerous or it may not be dangerous.

4359. You would see no objection to sanctioning the introduc-

tion of bacilli into a man's stomach?—There might be a great danger and there might not be. May 31,
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4360. Where would the danger lie?—The danger might lie in a variety of conditions,—in the quantity, in the condition of the person, in the condition in which the bacilli were when introduced, whether they were in a state of slight activity or in a state of great virulence, and especially on the quantity introduced. Dr. T. W.
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4361. But I gather from your answer that there would always be risk?—Not necessarily.

4362. You could not tell whether the man's stomach was in a condition to arrest them or not?—No; and then we might have dead bacilli as well as active bacilli.

4363. Suppose you put the meat into the open market, you would not know who was to buy it; it might be the feeblest as well as the strongest?—Would you repeat the question?

4364. I ask you whether you would sanction such a piece of meat being put upon the market for sale?—I said it depends upon circumstances.

4365. But the circumstances you mentioned relate only to the condition of the bacilli, which, of course, is unknown when you put it into the market?—I think, practically speaking, it may depend also upon the animal whose lungs are affected, whether the animal is well nourished and whether it is fit for food.

4366. I do not care about these general statements. I wish to know the grounds upon which you make them, and I must have an answer to this question, would you sanction, for public sale, a piece of meat with bacilli in it which had come from part of an animal adjoining a part which was tuberculous?—It depends entirely on the extent of the disease in that particular part. If the animal was extensively diseased, or if the tubercle was breaking down and softening, and showing it was likely to come into the circulation, and so on, I should think it might be dangerous, but there are conditions under which it might be permissible to sell it.

4367. Would you tell me what difference it makes how it is done if you get the bacillus in the thing? Is a bacillus a safe thing for a man to eat?—It depends entirely upon circumstances.

4368. Is it ever safe?—Undoubtedly, it may be safe.

4369. Is it always absolutely safe?—No; I cannot say so.

4370. Is it not always dangerous?—No, certainly not.

4371. It depends on the condition of the man, does it not?—No, not altogether.

4372. What does it depend upon?—On the condition of the bacillus as well.

4373. Is there such a thing as a harmless bacillus?—Yes, an attenuated one.

4374. But I am giving you a lively one—take a normal bacillus, with spores?—There you are in a different condition altogether.

4375. Take a bacillus with spores; is it a safe thing to introduce to any man's stomach?—They are eaten in myriads every

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4376. That can only be ascertained by microscopical examination?—No, I don't think so.
4377. Can you see a bacillus with the naked eye?—No.
4378. Then how on earth can you see them?—You have got such a thing as practical experience with meat. You don't find bacilli in an animal which is not suffering from tuberculosis in one or other of certain forms.
4379. How can that be? The bacillus does not change the character of the meat the instant that it enters an animal, so as to be visible to the naked eye?—Quite so.
4380. Then the bacilli may be there, and no human being can tell they are there, except by the microscope?—It may be there or it may not be there.
4381. I am only wanting you to say that it may be there?—It may be there or it may not be there. There are so many hypothetical cases put to me that I cannot answer them.
4382. *Sheriff Berry*.—You must answer this question.—He is asking me to assume so many things.
4383. *Mr. Comrie Thomson*.—No; I am at the very root of the matter. You have granted me that it is always dangerous to introduce a bacillus into the human stomach?—Excuse me, I did not admit that at all.
4384. Then is it always safe?—No.
- 4284-1. Then which is it?—That is exactly the position. It is sometimes dangerous and sometimes safe, depending partly on the condition of the recipient, and partly on the condition of the organism of the bacillus.
4385. I gave you the condition as the normal condition of the bacillus, and I gave you the condition which a thousand people may possibly have, some of them strong, some of them weak, some of them receptive, some of them able to resist, and you put this bit of meat into the open market and invite these people to buy. The weak man may buy it or the receptive man may buy it; does not that mean running a risk?—If that meat contains a certain quantity of active bacilli it would be dangerous if it was not cooked.
4386. How many bacilli?—Well, you cannot split up the thing and say one will or two will; that is quite impossible.
4387. But don't you know that one bacillus may be a very fertile source of mischief?—It is exceedingly unlikely.
4388. How do you know?—Because we do know by experiments with regard to other organisms that a certain number of them is necessary as a dose to produce disease, even when directly inoculated, and it is justifiable to draw a conclusion with regard to tubercular bacillus in the same way.
4389. Don't they multiply by spores?—Sometimes they do and sometimes they do not.
4390. What do they multiply by otherwise?—By fission.
4391. Then they have the advantage of multiplying in two ways?—No, it depends on where they are living at the time.

4392. They may do it either by spores or by fission?—Yes.

4393. And they can get themselves carried from one part of the body to another?—*Nolens volens*.

4394. And when they come to a place that suits them, they begin their noxious trade, do they not?—Yes, if they have all the materials there.

4395. And their products are alkaloids?—Yes, probably.

4396. And these are noxious?—Noxious to the bacillus as well as to the subject.

4397. That does not seem to me to be a very safe sort of creature to introduce into a man's stomach?—But we know it may be, and is introduced, and disease not follow.

4398. And, on the other hand, we know that it produces tuberculosis, which is a fatal disease?—Sometimes, and sometimes it does not.

4399. Do you mean that tuberculosis is not generally a fatal disease?—No, but the propagation of the disease is sometimes the result and sometimes not the result of the introduction of bacillus.

4400. You told me that tuberculosis was produced by this specific organism?—Yes, but in innumerable cases the organism does not lead to disease at all. The organism has a different effect altogether.

4401. I am pointing out to you that the organism is capable of producing this disease?—Yes.

4402. And that this disease is constantly fatal in animals, and sometimes fatal in man. Is it not a dangerous thing to introduce such an organism into a poor, feeble woman's stomach?—That is another hypothetical case.

4403. I have got you at last; whenever I took you to the female sex, you jumped to me at once.—I have a great regard for them.

4404. Now, if the description that I read to you from the evidence of the four gentlemen whom I have quoted, Mr. Robinson, Mr. M'Geoch, Dr. Wallace, and Dr. Littlejohn, of the condition of that bullock is correct, I don't think it would have passed under the French decree?—I don't remember the terms of it exactly, but, practically speaking, I believe it would not, according to that terrific statement that was read.

4405. It would not have passed?—Oh, no.

4406. Are you of opinion that that decree is uselessly strict, or do you think it is proper?—I have always acted on that, and I wish for nothing more.

4407. You think that the terms of that decree are very fair?—Yes.

4408. I am glad I have got you to that. Now, if I read the German decree—the law, apart from the practice—aright, it is very much the same?—In principle it is that the disease, if localised, does not prevent the meat being sold, but if it is generalised, it does.

4409. But the French decree of last year and the statement of German law which you favoured us with to-day seem to me to

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May 31, 1889. be identical; am I right in that?—No; I don't think you are quite.

Dr. T. W. Hime. 4410. What is the difference?—The German is much more liberal in its views.

4411. It may be a little more lax?—It is a good deal.

4412. What I refer you to in the French decree is this, “3. “The flesh of tuberculous animals shall be excluded from consumption (1) if the lesions are generalised, that is to say, not “confined; (2) if the lesions, although localised, have invaded “the greater part of an organ, or are manifested by an eruption “on the walls of the chest or of the abdominal cavity.” I think you are right in saying that the German is perhaps a shade more lax?—A very great shade.

4413. If you have got the German beside you, be good enough to read in English the beginning of it?—“A condition of the “flesh injurious to health in the case of tubercular animals is to “be assumed ordinarily in the following cases, when the meat “contains tubercular nodules, or the tubercular animal already “shows emaciation, even although these tubercular nodules are “not present in the flesh. The animals must be emaciated.” This is the law of 1885, confirmed by the law of 1887.

4414. I quite see it. That is the difference?—Yes, but the nodules are in the flesh; there is a great difference.

4415. Yes; I see the difference.—I should like to point out that it is an essential difference; it is not a difference of degree. The French decree speaks about the organ; the other speaks about the tuberculosis in the meat, which is a very different thing. It must be in an advanced condition before it is found in the meat.

4416. I quite perceive that.—When I am asked a question on the matter, I would like to put it in that way. Opinions are attributed to me which I don't entertain, and the law of Germany is interpreted in a way that is not accurate at all, when the learned counsel puts it in that way.

4417. I quite grant you that it is more lax; let us pass from the subject. Do you think that any respect ought to be given to the decree of the French Government following upon the report of the *savants*?—Yes, and to that of the German Government too. At the same time, I think perhaps in England we are just as wise as they are in France.

4417-1. I think so too, and it is remarkable that the same conclusion was arrived at, only a little more directly, at the very same time in England?—The English people came first, and the English report was brought over to France, and it was under consideration there before the French decree was passed.

4418. I wish to put these two facts to you—our Government appoint a commission, and take a great mass of evidence, and they issue a report in July, 1888?—A very small proportion, pardon me, of this evidence has reference to tuberculosis.

4419. There is about one-half of it?—Not one-sixth of it—not one tenth part of it, with all respect to you.

4420. There is a large part of it, at all events, and they came to a conclusion?—Yes, many conclusions. May 31,
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4421. Then there was a Congress for several days in Paris, attended by 200 or 300 people, and we have been told by those who were present that they were not what you were pleased to call camp followers, but that they consisted of the most distinguished veterinarians and scientific men on the continent of Europe; they arrived at a conclusion, and such weight was given to the resolution of your camp followers that the French Government passed a decree to give effect to it. Do you think that these are two circumstances which ought not seriously to be taken into consideration by the authorities in large towns?—With all respect, I think the circumstances are very different indeed from what you represent. Dr. T. W.
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4422. In what respects?—In the first place, I don't consider that a resolution of a veterinary congress is one of those Delphic oracles which cannot err, but this resolution, whatever it was worth, went in for total condemnation, and the French Government refused point blank to act upon it. They said, "We will pass a law for partial destruction."

4423. *Sheriff Berry*.—They certainly had the whole thing before them, and they came to the conclusion that that was the right course?—Yes, but the Government did not act up to it.

4424. *Mr. Comrie Thomson*.—They did act up to it?—No, the decree only sanctions partial destruction.

4425. Then you don't attach any importance to the English Commission?—Certainly, some small importance.

4426. Why should it be some small importance?—Because the question of tuberculosis was not gone into at that commission in at all an exhaustive way. The Commissioners themselves would not say that it was so.

4427. They took upon themselves to report very distinctly?—Yes.

4428. That looks as if they thought they had material to go upon?—I don't suppose they expected it ever to be acted upon. They know the end of commission reports—the waste paper basket.

4429. That is what you mean to say, that they never expected their report to be acted upon?—Yes. I never expect it for a moment.

4430. Are you serious?—Yes, quite.

4431. I am very sorry to hear it. You have heard for the last three days here the evidence of gentlemen who you say stand high in their profession; do you think they have been playing the fool with us, and don't expect their opinions to be acted upon?—I agree a great deal with those gentlemen.

4432. But not upon the one point?—What is the one point?

4433. That where the animal is infected with tuberculosis, the apparently sound flesh should all be condemned?—But that is only the opinion of yesterday and the day before. The day before that they were of the opposite opinion.

4434. I asked you if you attached any importance to the

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4435. When did you make up your own mind on the subject? —I have been acting on the same principle for years.

4436. For how many years?—For the last ten years.

4437. Then you thought there was no reason for reconsidering the subject when Koch made his discovery about bacillus?—Pardon me, I have always been giving the greatest and most serious attention to the subject, because I felt a great responsibility. I have not neglected the point, and I adopt Koch's opinion in full. You are opposing his published opinions.

4438. But the fact that the bacillus of tuberculosis was discovered in 1881 does not seem to have affected your opinion in this respect?—Because I had the opinion of Koch himself that tubercular meat in that condition was not at all diseased. I look upon him as a great authority with regard to the bacillus, and I looked upon him as an authority that there was no danger from the use of the meat.

4439. Then you think there is no danger to be apprehended from the spread of the tubercular organism?—I am sure this is a bugbear that will shortly die out—a great bugbear.

4440. You expressed your high approval—you referred to his book—of Dr. Fleming, the principal veterinary surgeon to the army. In May, 1883, he says, at page 164—"We find that in recent days the majority, if not the whole of those who have examined the matter most closely, agree to the infectiousness of the disease. Looking at it from this point of view, we are bound to pronounce it one of the most serious maladies which affect animals, not simply because of its insidiousness and vitality, but from the fact of its being transmissible from the bovine to other species, and from animals to man. . . . There is no doubt that the serum of animals affected with tuberculosis is virulent. . . . I think that every portion of animals affected with tuberculosis should be destroyed." These are Dr. Fleming's words I am reading. Now, that is Dr. Fleming, and he referred you to a gentleman whose opinion you probably will say you don't attach much importance to, although he is the most distinguished man in the profession in Ireland, and was Professor of Hygiene. You explained to me that he was only a chemist?—Not only a chemist, but that is his specialty.

4441. But you mentioned that his eminence was that of a chemist only?—Pardon me, I did not say so. I said his specialty is as a chemist, but he is a distinguished public health analyst and medical officer of health. He has never been in practice at any time, and would not claim to be an authority on the nature of tuberculosis.

4442. You are mistaken in representing that you ever, up to

this moment, indicated that Sir Charles Cameron was a public health analyst. You said he was a chemist, and I now point out to you that he was President and Professor of Hygiene and Chemistry in the Royal College of Surgeons in Ireland, and here is what he says about what you describe as a great bugbear. I am reading from page 252 of the minutes of evidence:—

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“7939. Then it is quite your opinion that all the flesh of tubercular animals should be destroyed?—Yes; no matter in what condition, they ought to be destroyed. I must say that, be the condition satisfactory or otherwise, I unhesitatingly condemned any animal that had tuberculosis in any part of it.

“7949. With reference to the prevention of this disease, first as regards cattle, and secondly as regards the danger to human beings. Now, as regards cattle, do you not think that the disease should be included in the Contagious Diseases (Animals) Act?—I look upon it as much more serious, from a sanitary point of view, than pleuro-pneumonia. Whilst I would rather eat the flesh of a healthy animal, I would not mind so much if it were suffering from pleuro-pneumonia, but under no circumstances would I allow anyone to eat the flesh of an animal affected with tuberculosis.

“7950. Consequently you would strongly support the view that this disease should be included under the Act of 1878?—I am glad to learn that such a proposal is to be entertained. It is a much more serious disease, in my opinion, than pleuro-pneumonia.”

“7957. But, on the whole, you regard the danger to the public health as being so great that you think every encouragement should be given to the reporting of such disease?—Well, as a sanitarian, if I were asked to make a choice between reporting pleuro-pneumonia and tuberculosis, I would unhesitatingly say tuberculosis—that is, from a sanitary point of view.”

“7958. From its danger?—Yes, from a sanitary point of view.” Now, it probably does not shake you that the leading authority in Ireland treats as very serious this which you say is a mere stupid scare?—In the first place, he is not the leading authority in Ireland, and, in the second place, very much greater authorities elsewhere do not take this view, but the opposite.

4443. *Sheriff Berry*.—Still, notwithstanding that, you regard what he says is a serious danger as a bugbear?—Well, I don't say it is merely a bugbear. I understand the question to be whether I consider the meat of an animal affected with local tuberculosis should be sold, and in spite of Sir Charles Cameron's opinion, I think it is quite proper to sell it.

4444. *Mr. Comrie Thomson*.—I gather that you agree in this respect with the report of the English Commission, that bacilli may be introduced into the system by swallowing as well as by inhalation?—I agree with that.

4445. You said to my learned friend that the bacillus was very slow in its progress, and you said to me that it was carried along *nolens volens*?—It might be.

4446. It might be what?—It might be carried along.

May 31, 1889. 4447. But why is it usually slow in its progress; does it not just go as fast as the fluids will take it?—It sometimes does not go at all.

Dr. T. W. Hime. 4448. That is very Irish; would you explain what you mean?—It stands still sometimes.

4449. I am assuming it is going; does it not go as fast as the blood goes if it is in the blood stream?—It may or it may not. It may not go at all. It may stick to the walls of the blood vessels, and not move.

4450. If it is in the blood stream, it will go with the stream?—Yes.

4451. And that is not a very slow pace?—No.

4452. And if it is in the lymph, it will go with the lymph?—Yes; and that is a slow stream.

4453. In short, it has no power over its motion?—No.

4454. It is a vegetable?—Yes; but some vegetables move.

4455. And it is carried along in one or other of these streams?—Yes; very rarely in the blood—most exceptionally.

4456. Now, I want to know whether or not I am correct in this that what you call general tuberculosis, and what I think my friend called generalised tuberculosis, is anything more than an irruption of bacilli into the blood stream?—No.

4457. Then the rate at which the general tuberculosis will go on will depend upon the rate at which the blood carries the bacilli?—You may have generalised tuberculosis which may have begun in another way. It may begin in the lymphatics and spread from there.

4458. That is quite a fair observation. If these bacilli be carried by the lymphatics, that will be a slower process than if they were carried by the blood stream. I quite see that, but that is the meaning, when you reduce it to its elements, of generalised tuberculosis, an irruption of the bacilli into the stream?—Pardon me for a moment. When we say that an animal is suffering from generalised tuberculosis, that does not mean merely that there is a general irruption of tubercular bacilli in the blood. We mean that the animal is suffering from tuberculosis in the tissues; that is a different thing.

4459. The bacilli have been brought to the tissues where the suffering develops itself, having been brought there by the blood stream or by the lymph?—Yes.

4460. And then when the presence of the bacillus makes itself visible to the naked eye by the forming of tubercle and so on, that is that the bacillus has found a convenient lodging for itself, where it remains and spends its wicked existence?—Yes.

4461. Then if the bacilli are discharged with the blood stream in this way, I should think they must mingle to some extent with the muscles of the body; they would be carried into every part of the body if they go with the blood?—Yes, they may be.

4462. They will be, or probably your answer is more correct—they may be carried into every part of the body, including the muscles?—Yes, all things are possible.

4463. And I suppose that so far as our observation goes, some

days might elapse before there was any possible naked-eye symptom of the presence of the bacillus having begun his mischief in any place?—Undoubtedly.

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4464. So that no one could affirm with any certainty that bacilli had not in this manner been carried into a part of the carcase of an animal apparently quite healthy the day before it was killed?—No, and we should all become vegetarians in consequence.

4465. Well, that is an observation which has the advantage of being logical perhaps. You grant me that the bacilli might be lodged in the muscle of an animal a day or two days before it was killed, and no naked-eye appearance would show it?—All things are possible; that is possible, but contrary to every known fact.

4466. But don't you see that is the very danger against which those whose opinions you differ from desire to protect the public; is not that so?—Not any more than I do.

4467. I did not mean as to your wish, but it is the means which they think necessary?—I am sure they have the best motives. I quite admit that.

4468. That is the course they think it necessary to take?—Yes.

4469. And which you think quite unnecessary?—Quite.

4470. Because you think the risk of mischief is about equivalent to that of being knocked down by a meteoric stone?—There is no doubt that I agree with a great many there, the Government of France, for example, and of Germany and Belgium, and elsewhere.

4471. But observe, if you have got an animal that will develop tubercle in its lungs we shall say, and the blood is coursing through its body, and the bacillus has the great power of propagation that you have mentioned, do you think that there is not a considerably larger number of chances of these creatures being distributed through the body than the chance of a stone from heaven?—There are so many hypotheses that I don't know how to answer the question; it is always "supposing."

4472. I gave you a beast with a tubercle in its lung—there is nothing else of hypothesis than that—and I gave you the blood coursing through the body, no hypothesis there—and I took your own statement that the bacilli propagate themselves in two different ways, and I asked you if there was not considerable risk, at least greatly more risk than that which you chose to illustrate by your meteoric stone, of the bacilli being taken to various parts of the body where their presence was not manifest at the time the animal went into the market?—Then I consider the danger is not necessarily considerable.

4473. It comes to be a question of degree, however?—Quite so; both in Britain and France, and everywhere.

4474. And therefore a question of opinion?—A question of opinion, of course.

4475. That being so, it just comes to be this, whether the economic side of it or the sanitary side of it is to have the most

May 31, 1889. effect given to it?—I think, if the public health is concerned, I should not regard the economic side for a moment.

Dr. T. W. Hime. 4476. I think that is a very good sentiment, but is not that what the question raised here is about?—Yes.

4477. Then why were you waxing so eloquent with regard to my learned friend's questions as to wasting good meat and such like?—He simply asked me questions, and further, I happened to mention that I had a letter from a very eminent man in Germany, Professor von Pettenkofer, in which he mentions that point.

4478. The two sides are these: you say, "If you destroy this you destroy good meat, the consumption of which would have involved no risk:" the other side say, "You may destroy some good meat, but you involve the public in a risk." That is the whole question, is it not?—Yes, I should say so.

4779. And do you think the economic side overrides what I may call the health side?—Pardon me. I say advisedly that the economic side is one of very signal importance, but I would not consider it for a moment where health is concerned.

4480. But you have granted me, I think, that the bacillus and the life that it leads in the body of an animal is an element of danger, whether of a great degree or a small degree is open to each man to form an opinion about?—Yes; each man can form an opinion, and also ascertain the facts on which to form his opinion.

4481. Now, I find in a report (I am reading from the *Journal of Agriculture*, page 223), the annual report of the Royal Veterinary College, and their investigations in 1888 for the Royal Agricultural Society?—Is that the London College or the Edinburgh College?

4482. This is the London one, the Royal Agricultural Society of England. I find this passage—"These results are significant, but the experiments with the flesh will have to be repeated before any positive conclusion can be deduced from them. Then there is this passage—"It is evident, however, that milk containing the bacilli is certainly infective." Do you see any reason why, if that is true, that milk containing bacilli is certainly infective, we should not anticipate that meat containing bacilli should not be infective, unless—I grant you this—destroyed by cooking?—I think milk containing bacilli may be dangerous.

4483. But I am asking you to assume that it is certainly infective. Then I want to know why we should not anticipate that meat containing bacilli would also be infective?—The only reason I know is that the experiments have proved that it is not.

4484-5. Pardon me, I think it is the other way. The position I think rather is that the experiments have not proved that it is; you cannot prove a negative you know. Do you see any reason why, if milk containing bacilli is certainly infective, meat should not be so also?—Well, I can only go back to the answer I gave before, that that will depend upon a great many conditions.

4486. Of course, you must have two things, you must have both the thing that does it and the thing it does it to; but I am

assuming that you have a person —— ?—And you give him a large dose of bacilli ?

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4487. I don't stipulate for a large dose ?—That is not a question of opinion ; it is a question of fact.

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4488. *Sheriff Berry*.—Perhaps you will take the learned counsel's question as he gives it to you.

4489. *Mr. Comrie Thomson*.—Do you see any reason why, if milk is certainly infective, the same thing should not be predicated of meat ?—Yes.

4490. What is it ?—The fact that it is not.

4491. How do you know that ?—I have known it to be tried ; I have known animals which have received the most direct effect of uncooked meat direct into their bodies, and they have not been affected by it.

4492. But suppose one person were to eat it and be affected by it, would not that show the truth of the proposition that it was infective, and would not be affected in any way by another of these negative instances ?—That is another suppositious case ; that I don't know. There is nothing to justify it at all that a person has been affected by it.

4493. But you can give me no reason except that which you have mentioned that it does not, which I don't consider a reason ?—Exactly.

4494. You can give me no other reason why, if milk is certainly infective, we should not apprehend that meat will be so also ?—No.

4495. Now, you attach considerable weight, I think, to the authority of Koch ?—Yes.

4496. Would you look at page 96 of his book. I read this to you—"Direct observation also seems to show that in the first place the tubercle bacilli are seized upon and carried away by wandering cells." Then, in the same paragraph, he says: "It is hardly possible to find any other explanation of these cells than that they are wandering cells which have seized upon the bacilli in the circulating blood, and carried them away to the neighbouring tissue." Now, that I presume you admit to be a sound observation on the part of the writer. Before you answer I will read to you another paragraph ; turn to page 194. He says there: "That does not furnish an insurmountable barrier to the further progress of the bacilli. (1). For instance, under special circumstances they may enter the blood stream. This happens, as Ponfick has shown, when interculosis attacks the thoracic duct and reaches its interior ; then the tubercle bacilli pass from the lymph-stream direct into the circulation. (2). The second and certainly the most common way in which the tubercle bacilli enter the blood was discovered by Weigert, viz., by the formation of tubercles in the walls of veins, and the bursting of the disintegrating nodules into the lumen of the vessel. (3.) A third possible way is mentioned in the case described on p. 105, where the bacilli grew into the lumen of an artery. In all these cases the bacilli are quickly carried away by the blood stream, distributed to the most different organs of

May 31, 1889. "the body and deposited there." That you also agree with?—
 Dr. T. W. Hime. Yes, but these are pathological curiosities he is talking about; he is not talking about things that occur every day.

4497. He does not say so?—No; but any person reading that, who is familiar with this book, knows he is explaining rare and remarkable things.

4498. We know the German habit is rather precise, and I think if he thought this was rare he would have said so?—I am very familiar with German books, and I know their exactness perfectly well. That exactness did not require the writer here to explain any limitation of that sort, but anyone reading it who is familiar with these subjects, would see at once what he was at.

4499. *Sheriff Berry*.—He is explaining the pathology of the disease under certain circumstances?—Yes.

4500. *Mr. Comrie Thomson*.—The sentence before that which I last read is this—"The changes thus produced in the glandular tissue seem generally to prevent any further penetration of the bacilli by way of the lymphatics, but that does not furnish an insurmountable barrier to the further progress of the bacilli. For instance," and then he gives three different ways. These may be curiosities, or they may not, but he does not say so?—Quite so. If it only happened in three cases he would have to explain these three.

4501. That is your gloss upon it, that although he does not say so he must be dealing with pathological rarities?—Certainly, that is the case.

4502. Now, I want to point this out to you, that my friend asked you, and you twice answered him, whether this disease of tuberculosis was or was not a blood disease, and you said no. I have no doubt in a sense that is perfectly true, but it is a disease which is distributed by the circulation of the blood, is it not?—It may be, under very rare circumstances.

4503. How do you know they are very rare; what right have you to say they are rare?—For a variety of reasons. For instance, the very fact that general tuberculosis is exceedingly rare is one proof. If it was commonly conveyed by the blood it would be a very common occurrence, but it is a very rare and exceptional circumstance.

4504. And that is your ground for saying so, that tuberculosis is a rare disease?—No; but that generalized tuberculosis is a rare disease. There are other reasons besides that, a number of reasons that I could give. The fact that tuberculosis is so very rarely congenital is, I think, a very strong argument that it is not a blood disease.

4505. I did not say it was a blood disease; I am not disputing that statement of yours. I am asking you if it is not a disease that is propagated by the circulation of the blood, although not a blood disease in the ordinary sense of the word as if the blood itself was poisoned. The blood is a means of conveying the poison, is not that so?—It may or may not be.

4506. Is it not so?—No, it may or it may not be so. There

are a variety of circumstances to be considered. It may be in one man spread by blood and in another man not spread at all, but remain localised to one spot. If by accident or by any reason it gets into the blood it will be spread by the blood, but as a matter of fact it does not get into the blood.

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4507. Sometimes it does?—Very, very rarely. As a matter of fact, tubercles are, as a rule, exceedingly free from blood vessels of all kinds. That is one of the characteristics of tubercle.

4508. Now, I am going to take you to this French book, that account of the Congress for the study of tuberculosis, under the presidency of Mr. Chauveau. You told my friend that tuberculous matter was not found in vaccine lymph, did you not?—That is the general experience, and I never heard that it had happened.

4509. You told him that it was not, and you now tell me that you never heard of its being, which is it?—On every occasion that I have ever heard of its being looked for, and I have looked for it myself, I have failed to find it, and there is additional evidence in this fact, that I think it is unknown in the history of vaccination that a tubercle ever has been produced at the seat where the vaccination was made, and if it was tubercular, it would undoubtedly produce, some time or other, tubercle at the place where the vaccination was made.

4510. I think you said that M. Chauveau made some statement to the effect that the transmission of tuberculosis by vaccination is a fact almost exceptional. What was it you said about M. Chauveau's opinion of vaccination?—I quoted a line on page 447, at the bottom.

4511. Would you look at the beginning of his speech. "The transmission of tuberculosis by vaccination is a fact almost exceptional." Now, I want you to look at the gentleman who speaks before him, M. Degive of Brussels, and read what he says:—"It is possible the tuberculosis may be transmitted to man by vaccine taken on tuberculous animals. There is a means of escaping that which the congress may recommend. It will be satisfactory to take the vaccine from a calf, to kill the animal, and to make a *post mortem*. If the animal is in good health, the vaccine from the calf may be used for vaccinating direct, or for new cultivations, if not the tubes would be destroyed." That is the practice which has been adopted at Brussels to do away with any chance of danger. The point is this, they use calf vaccine in France and Belgium?—Yes, in Belgium they do very largely.

4512. And I think in France too?—Not much.

4513. The point is this, however, that in Brussels they do not allow vaccine to be used until they have killed the calf and had a *post mortem* on him, and if they find he is free of everything, then they give out the lymph?—And the idea is laughed at everywhere.

4514. Then, M. Chauveau gets up upon that to express his view, and that is what leads to him saying that although there may be transmission of tuberculosis by vaccination, it is almost exceptional?—He says *Nullement*—never.

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Hime. 4515. Would you read that sentence at the beginning of his speech.—That is the wrong place. At the fourth line from the bottom of the page he says, *Nullement*.

4515-1. But you observe that he approves of the precaution that is taken in Belgium?—Yes, killing a dead horse; that is what it is. The danger was never known to exist. M. Degive never presumed to suggest that anybody ever had tuberculosis in vaccination, but he says it is possible, and I will explain to you the reason.

4516. No, please don't. Observe, all he says is this, that this practice has been adopted in Brussels; that is all I want. I grant you that it may be useless, but the Brussels people don't think so?—You wish to get half truths from me which are scarcely fair. If you look at this book in another way, you will find equal evidence with regard to vaccination and its never having been followed by tuberculosis.

4517. Are you aware that since that was spoken by M. Chauveau, he has made other experiments. I will tell you one which is mentioned in the books, that he put a seton into a tubercular cow, and the pus that was created by the irritation was found to be tuberculous; are you aware of that?—I am not aware of the exact fact.

4518. But you think it is quite likely?—Yes.

4519. It is more than likely; it is proved?—But that will be in the meat; it is a question of glands.

4520. You said to my friend that tubercle may contain no bacilli, but the tubercle of tuberculosis cannot come into existence without a bacillus?—Yes; but the bacillus may die in the tubercle and never be found.

4521. Will you answer my question, that tubercle of tuberculosis can only be produced by a bacillus tuberculosis?—Yes.

4522. So that if you have the tuberculosis without tubercle, the fellow has gone away and left his house. The tubercle of tuberculosis must have been produced by a bacillus tuberculosis?—Yes.

4523. It is quite true what you say, that there are tubercles which are not connected with tuberculosis, and these, of course, may not be the symptom of anything dangerous at all. Therefore it is quite correct, in one sense of the word, that tubercle is not necessarily a sign that the animal is seriously diseased, but that is a different thing from saying that the tubercle of tuberculosis is not a sign of disease, is it not?—Yes.

Re-examined by *Mr. Jameson*.

4524. In this book of yours, in the passage which was put to you, what do you mean when you use the words "that meat should be regarded as unfit for food if (3) the animal is suffering from diseases communicable to man"; and then you mention, among others, tuberculosis?—Anyone who reads that—and he who runs may read—will see that the book is a *précis*, in abbreviated form, of certain facts.

4525. *Sheriff Berry*.—It is written in a very general way?—May 31,
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Certainly so.

4526. *Mr. Jameson*.—When you mentioned tuberculosis in the list of diseases, were you referring to miliary tuberculosis or general tuberculosis?—Of course, to general tuberculosis. I was not referring to the case where an animal had a tubercular wart on the end of its tail or anything of that kind. Dr. T. W.
Hime.

4527. Is there any recorded case of the tubercular bacillus being communicated by means of vaccination?—I don't think there is one. I don't know one, and I have never heard of one.

4528. And this method has only been adopted by this particular doctor at Brussels?—Yes, and I will explain the circumstances, because I know the gentleman very well. He is the head of the Veterinary College at Brussels. The calf vaccination institution is under his charge at the Veterinary College. He vaccinates the calves there, and for various reasons he likes to kill the calf and have it examined afterwards.

4529. In fact, it is more for the sake of seeing the inside of the calf than preventing the spread of tuberculosis that he adopts this system?—Yes.

4530. Now, if you believed that there was any real risk in selling the flesh of an animal locally affected with tuberculosis to be consumed, would you recommend the entire destruction of the carcasses of all animals found locally affected with tuberculosis?—Of every animal, and even before death I think they should be destroyed.

4531. And is it because you believe there is no real risk unless the animal is generally tuberculous that you think the flesh of such animals as the bullock or cow in this case should be eaten?—Certainly; I don't think there is the slightest danger.

DR. SEPTIMUS GIBBON, *sworn*, examined by *Mr. McKechnie*. Dr. S.
Gibbon.

4532. You are a bachelor of medicine of the University of Cambridge, and a bachelor of arts of the same University?—Yes.

4533. You are a member of the Royal College of Physicians in London?—Yes.

4534. Have you been physician to the London Hospital?—Yes.

4535. Are you now medical officer of health for the Holborn central district of London?—Yes.

4536. Does that include a considerable portion of the central meat market in London?—A considerable portion outside of the central meat market. The central meat market is placed inside the district; but by Act of Parliament, its supervision belongs to the Commissioners of Sewers, the Local Authority of the city of London.

4537. Is it partly in your district?—It is.

4538. Have you been engaged in the inspecting of slaughter-houses, and the carcasses of cattle sold in the market?—Yes, for thirty-three years.

4539. Have you been in the habit of inspecting them as an officer of health for all that time?—Yes.

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4540. With reference to animals slaughtered and found to be affected with tuberculosis, what has been your practice?—My practice has been to have the viscera that contained tubercle destroyed, and to pass the rest of the carcase as fit for food.

4541. Have you ever known of tuberculosis being produced or caused in man by the eating of the flesh of animals suffering from tuberculosis?—I have not.

4542. Do you know the distinction between generalised and localised tuberculosis; do you recognise the distinction?—I do. I call generalised tuberculosis acute tuberculosis in the human subject.

4543. If an animal has been suffering from localised tuberculosis, and is otherwise emaciated, what has your practice been?—If it is very much emaciated, we seize it and destroy it.

4544. But if the tuberculosis is not generalised, and the animal has been well nourished, and there is no emaciation, do you pass it?—If it is fairly nourished we pass it.

4545. I believe since this trial began, that is on 28th May, you inspected the carcase of a cow, and also the carcase of a bullock?—I did.

4546. I want you to speak to the bullock first, and to give the results of your inspection?—On 28th May I inspected a bullock, two years old, at the Corporation refrigerator. It was a remarkably healthy-looking, fat, fine animal. The fat was firm, and well set; the meat, as well as the fat, was of a good colour. There were two patches of discoloration or congestion on the lower side of each costal pleura, near the diaphragm, adjoining the diaphragm, but without any adhesion or tubercular deposit on either side.

4547. Did you see anything about the bullock to indicate the presence of tuberculosis?—Nothing. There was one pleura, I think it was the left pleura, where there were a few deposits of fat immediately under the pleura, in large round spots of a mottled description.

4548. Was that tuberculosis?—It was not. I cut through these spots, these elevations. They were simply elevations of the pleura on fat.

4549. Did you make an examination of the internal organs, and carefully examine internally for any evidence of tuberculosis?—I did. I examined most carefully all the internal organs.

4550. And all the interior of the organs?—All the interior by dissection.

4551. Did you see any nodules?—I saw no nodules.

4552. Could they have escaped your observation and examination if they had been there?—I think not. I examined for them very carefully.

4553. You were there for the purpose of examination; have you any doubt that if the nodules had been there you would have seen them?—None.

4554. The animal was killed on the 8th of May; if it was suffering then from tuberculosis would the evidence of it have disappeared by this time?—I think not.

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4555. Nor the nodules?—Nor the nodules.

4556. Especially as the carcase was in a refrigerator?—That would make no difference,

4557. So that if they had been seen there on the 17th of May, they ought to have been still there?—They ought.

4558. They would not have disappeared of their own accord?—Certainly not.

4559. Did you taste the flesh of the bullock?—I tasted it.

4560. What do you say about it?—It was remarkably good, sweet, wholesome.

4561. Was it raw when you tasted it?—Yes.

4562. That is a good enough way of making the test?—It is a very good way to know its quality, and whether it has been physicked or anything of the sort.

4563. It was sweet, wholesome, and fit for human food?—Yes.

4564. Would that animal have been condemned in London?—Certainly not, either in the live market or the dead meat market.

4565. You would have passed it?—Yes.

4566. You have no hesitation in saying so?—None whatever.

4567. At the same time did you examine the carcase of a cow?—I did.

4568. Tell us what you got there?—The carcase of the cow was that of an older animal, some six years old. It was moderately well nourished. It was not the carcase of a waster, as it is technically called.

4569. Did you see any unhealthy appearance in the carcase, in the flesh?—None whatever.

4570. Did you see any signs of emaciation?—One pleura had been partly cut away.

4571. My question was as to emaciation?—None whatever.

4572. Did you find any evidence of tuberculosis in the cow?—Not in the carcase, except that one pleura had had some adhesion.

4573. Which was that?—It was the left costal pleura, and that had been taken away to the extent of one's hand.

4574. There were signs of that, that the flesh had been taken away?—Yes, the pleura.

4575. My question was, did you see any signs of tuberculosis anywhere about the cow?—With that exception, none in the carcase. Then I came to examine the viscera. I examined the uterus and mammary glands, the principal portion of the liver and lungs. When I came to the lungs I found a considerable amount of tubercle in the base of each lung.

4576. There was tubercle in the cow of tuberculosis?—Yes.

4577. You found evidence of that?—Yes.

4578. To what stage had it gone?—It was in a quiescent stage, judging from all the concomitants of it. The nourishment of the animal was fairly good. It was genuine tubercle.

4579. What would have been your expectation; would the animal have got better or worse, or could you say?—I could say it was getting better—that it was recovering.

4580. If the animal had not been killed on the 8th of May, it might quite well have recovered?—It might.

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4581. Would that have been your expectation?—As far as I could judge from the lungs and carcase, it would have been.

4582. What kind of tuberculosis, then, was that cow suffering from?—From local tuberculosis. It would depend very much upon how the animal was kept afterwards whether it would recover, if it was kept under proper hygienic conditions; with proper surroundings and with plenty of air and sunlight I think it would have lived.

4583. Did you taste the meat of the cow?—I did in the carcase. It was very good, not so good as that of the ox, not so sweet and tender. It was fairly mixed with fat. It was marbled with fat to a slight extent.

4584. Did you taste it raw?—Yes.

4585. You say it was good, but not so good as the bullock's?—Not quite.

4586. Would the carcase of the cow have been condemned in the central meat market in London?—Certainly not.

4587. Do you think anybody could suffer from eating the flesh of any of these animals?—I think not, according to my experience, and I have had a large experience in tubercular disease.

4588. Would you have been quite willing to have dined off either of the two yourself?—I should not have hesitated in the least.

4589. How is tuberculosis caused? I want a brief answer.—It is caused mainly by insanitary surroundings and depressing conditions. It is a conditioned disease, and the conditions are that you must attend to the habits and hygiene of the animals. You must not put them in a zoological garden or keep them tied up away from air, sun, and exercise. You will produce tuberculosis in most animals if you do that.

4590. But if an animal has no predisposition to it, it won't take it?—I don't know about the lower animals in the town. No doubt, a good many milch cows suffer from tuberculosis in London and other large towns.

4591. *Mr. Comrie Thomson.*—Did you say that this was a conditioned disease?—Yes, caused by the surroundings, habits, food, and so on. It depends on how you keep the animals. If you change their treatment, abstracting the conditions, most animals, as far as my experience goes, resist the bacillus and recover. The disease is arrested and it goes no further.

4592. *Mr. M'Kechnie.*—In localised tuberculosis is there a bacillus?—I am not a bacteriologist. I have seen the bacillus when it has been isolated by other individuals.

Cross-examined by *Mr. Ure.*

4593. When you saw the carcase of the bullock, had any portions of it been removed?—I think not. Its viscera had been cut about.

4594. And bits of it had been taken away?—Yes.

4595. From the pleura?—It had been sliced, and I think a very small portion may have been taken away.

4596. Had any of the glands been removed or had they been cut into?—Not that I was aware of.

4597. Had any incisions been made in the lungs?—Certainly.

4598. And portions removed?—Well, I could not say. I don't know anything about their being removed.

4599. You don't know about that?—I sliced them myself, and they had been sliced before.

4600. But I may take it that in the portion of the carcase that you saw there was not the slightest trace of tuberculosis?—Not the slightest.

4601. I daresay you have read in the newspapers the evidence which has been given by the witnesses who were examined in the earlier stages of this inquiry?—I have not.

4602. Will you take it from me that other gentlemen who had the advantage of examining the carcasses earlier than you found tubercular matter in the pleura, found nodules in the lungs, and found bacilli in the prepectoral glands of the animal—assume that that is true, would that alter your view in regard to the condition of the animal?—Yes; if they were competent examiners that I had confidence in. There was, as I told you, several enlargements in the pleura on one side, which looked like tubercle, but I am certain they were not.

4603. And if on examination by the microscope the typical tubercle and bacilli were discovered, would that confirm your view that the animal had been suffering from tuberculosis?—It would, but I don't think myself it has been proved that a tubercle bacillus is the true cause. It has not the power of producing the disease in a healthy person, and therefore it is not the virus of the disease.

4604. I did not ask about that. I know you do not believe in the bacillus. I was asking you, supposing the facts to be as I have given them to you, would you alter your view with regard to the condition of this animal when it was slaughtered?—I should not alter my practice in dealing with it.

4605. Would you alter your opinion?—I would, if I had full confidence in the examiners.

4606. And that they were honest men?—Certainly.

4607. Now, suppose you found an animal with tuberculous matter in its pleura, and the tubercle nodule in its lungs, and bacilli found in the prepectoral glands, how would you prepare it for the market, or would you allow it to go into the market?—Not believing in the infection of tubercle or its bacillus, I should have no preparation; I would put it into the market.

4608. You do not attach the slightest importance to these things?—No, I do not, as evidence of unwholesome meat.

4609. You attach no importance to any of these indications I have mentioned?—Not for practical purposes.

4610. Did you ever hear of the bacillus?—I have heard of them, and seen many of them.

4611. But you reject entirely, I understand, the theory that the bacillus causes tuberculosis?—I do; regarding it as a concomitant, not a cause.

4612. You think that is nonsense?—I think it is illogical nonsense.

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4613. Now, in regard to the cow, had portions of the cow been removed before you examined it?—A portion of the pleura had been removed. The viscera were all distinctly recognisable.

4614. You saw, in the case of the cow, that it had been suffering from tuberculosis?—Certainly.

4615. If you assume that tubercles had been found in its lungs and tubercle deposit upon its pleura, and the virus found in its inguinal glands, that would not affect your view with regard to its marketability?—Not at all; I have myself eaten it uncooked.

4616. Would you put it upon the market without hesitation?—I would.

4617. You reject entirely the view that it would be in the slightest degree injurious to anybody?—There is no proof or evidence that it would be.

Re-examined by *Mr. McKechnie*.

4618. In the district of which you are medical officer of health, is the death rate from the tubercular group of diseases advancing or decreasing?—It is decreasing.

4619. By what percentage?—By a large percentage. I cannot give you the exact figure except over the whole of London. It has decreased in 1888 nearly 20 per cent. on the corrected average for the previous ten years.

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Dr. ALFRED HILL, *sworn*, examined by *Mr. McKechnie*.

4620. Are you a doctor of medicine?—I am.

4621. Of what university?—Aberdeen.

4622. Are you medical officer of health for Birmingham?—I am.

4623. How long have you held that office?—Seventeen years.

4624. Have you had frequent, and by that I mean many, occasions for considering as to the effects of tuberculosis in animals?—I have.

4625. You have inspected and examined a great many animals suffering from that disease. What has been the practice in Birmingham with reference to carcasses of such animals slaughtered for human food?—Where the disease was limited in character—to an internal organ, for instance—the meat was allowed to be sold for food, the organ being destroyed.

4626. And did that apply also where even more than one internal organ was affected?—Yes, I do not think it would be condemned for two.

4627. That is where the disease is what is called localised?—Yes.

4628. But where the disease was generalised, what did you do?—Then, of course, as a measure of precaution and safety, the meat would be condemned.

4629. Is that the practice in Birmingham to this hour?—Yes, and has been for years.

4630. Have you ever known of a person in Birmingham suffering any prejudice from that practice?—I have not.

4631. Do you think that the flesh of a tuberculous animal

would be injurious except in cases where the disease was generalised, and the animal was emaciated?—I don't think so.

4632. And you hold that opinion from your experience as medical officer of health?—Yes.

4633. And from what you have read about the matter?—Yes, but more particularly from my own experience to this effect, that tuberculous diseases are rapidly declining in Birmingham.

4634. That is to say, the death rate from that group is not so high as it used to be?—Nothing like it.

4635. What has been the alteration in it, by how much has it decreased?—In *tabes mesenterica* or consumption of the bowels, which one would suppose would be a disease most likely to be produced by ingestion, the diminution in eleven years has been 58 per cent.

4636. And I suppose, during these eleven years, there has been no corresponding diminution in the eating of the flesh of animals?—No; I should say the reverse was the case, because the flesh is cheaper now than it was formerly; it is more easily obtained.

4637. Then take consumption, what has been your experience as to the death rate from it in Birmingham?—The death rate from consumption of the lungs has declined close upon 32 per cent. in the same period.

4638. Were you asked to examine the carcasses of a bullock and a cow at Yorkhill the other day?—Yes.

4639. That was on what date?—On the 28th of May.

4640. The same day as the last witness?—I am not quite sure.

4641. I think it was Tuesday you examined them both?—It was.

4642. Take the bullock first, and tell me what you saw?—I made a few notes at the time, and I will refer to these. The bullock was in two sides. The kidneys were *in situ*; the carcass appeared perfectly healthy; there was plenty of fat, and both it and the flesh were of a good colour and consistency.

4643. What colour was it?—Excellent colour—a good bright red colour. There was plenty of interstitial fat, showing that the animal was well nourished, and, of course, as a consequence, there was no emaciation anywhere.

4644. Did you notice any signs of congestion about the lungs and membrane?—There was a patch of congestion about six inches in extent on the right costal pleura, near the diaphragm. There was a similar patch on the left side, both quite superficial.

4645. Did you observe any symptoms of tuberculosis about the bullock?—None whatever, nor any ulcer nor any abscess.

4646. Do you know the characteristic nodules of tuberculosis?—Perfectly well.

4647. Were they there?—I could see none. I looked carefully for them, and did not see any.

4648. If they had been there at the time of slaughter, you would have expected to have found them?—Yes, certainly.

4649. Unless some one had removed them?—Yes.

4650. They would not have disappeared of themselves?—No.

4651. Are you prepared to give a definite opinion upon the question whether that bullock ever suffered from tuberculosis?—

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 Dr. A. Hill. I could not give an opinion that it did at all unless I found tubercle. I found no tubercle, and therefore I should presume it had not suffered from tuberculosis.

4652. Would you have passed that bullock in your town as fit for food?—Certainly, without the least hesitation.

4653. Was the flesh really first-class?—I think so; in my opinion, it was.

4654. In every way?—The meat was, except these two patches of congestion.

4655. It is not the flesh; these were membranes?—Yes; I did not hear you say the word flesh. I should have passed the flesh without the least hesitation.

4656. Of course, nobody would expect you to pass the membranes?—No.

4657. Was there much thickening of the membranes or any of them?—Not in the bullock.

4658. No thickening to indicate the presence of tuberculosis?—No.

4659. And tuberculosis, I suppose, does thicken the membranes very considerably?—Yes, there is generally exudation.

4660. Now, to come to the cow, what do you say of it?—I examined the left side first, and found there some slight remains of adhesion, just about the diaphragm.

4661. You did find evidence of tubercles about the cow?—Yes.

4662. Where?—In the lungs.

4663. Anywhere else?—I could not say positively that I did.

4664. You suspected its presence in the lungs?—In the lungs I saw it; I saw it there.

4665. But you could not say you found it anywhere else?—No.

4666. At what stage was it in the lungs?—At what is called the second stage.

4667. What was its condition?—It was in pieces of a yellow colour. They varied from the size of a small pea to something larger.

4668. But my question was really as to its activity or otherwise?—It was not active. It was in a quiescent condition, and encysted.

4669. What did that indicate as to the possibility of the development of the disease, assuming the animal to have been kept alive, and in favourable and healthy conditions?—It indicated that it might remain in a quiescent state for any length of time without affecting the general health, or becoming absorbed in the system.

4670. That cow might have become a very old cow?—Yes.

4671. And might have had many calves, and have given milk?—Yes. I have frequently, in *post mortem* examinations, seen bodies that had died of some other disease showing signs of latent phthisis.

4672. But in unhealthy conditions of life the animal would probably soon have died?—It might have done so.

4673. Did you examine the flesh of the cow?—Yes.

4674. What have you to say about it?—I say it was healthy flesh. It was darker in the colour than that of the bullock, but not at all inconsistent with perfect health. The colour of meat varies very much according to circumstances.

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4675. Did you see any symptoms of emaciation about the cow?—None whatever.

4676. Would that cow have been passed in your slaughter-house or in Birmingham?—Yes; only retaining the lungs and membranes.

4677. Would there be any danger to the life of any person from eating the flesh of either bullock or cow?—I don't think so. I should not object to eat it myself.

4678. Has this disease called tuberculosis ever been transmitted by ingestion of flesh from the lower animals to man?—There is no case on record, I believe. I never heard of one.

4679. Do you think it at all possible that such a thing would occur?—I don't think so.

Cross-examined by *Mr. Ure*.

4680. I understand you to say that it is your practice to condemn carcasses affected with what is called generalised tuberculosis?—Yes; these are condemned.

4681. Why do you do that?—Because the disease is more extensive—it permeates all the fluids of the body, and the flesh is more likely to contain contagious elements, and there would be, no doubt, some risk in using it. I don't say there would be actually certain danger, but there would be a risk.

4682. You think there would be a risk in using a tuberculous carcase?—Yes.

4683. What is the risk?—The risk of taking morbid matter into the system.

4684. Is tuberculous matter dangerous?—I did not examine the carcase for tuberculous matter.

4685. Do you attach any importance to the cause of the tubercle?—I don't know that the cause is positively made out.

4686. Do you hold the view that the bacillus is the cause of tubercle?—I don't know. I have not decided. I do not either accept or reject that view.

4687. Suppose you held the view that the cow contained bacilli, would you or would you not consider that dangerous?—I should think it inadvisable to use it. I would not say it would necessarily be harmful.

4688. But probably harmful?—Well, as a matter of precaution, I would recommend it not being used, but I think it might very likely be used with perfect safety.

4689. You think, then, there is a probable danger in using meat that contains bacilli?—I should say there was some risk.

4690. And you would condemn it accordingly, in the interests of the public health?—I would.

4691. To what extent might the disease be localised in the carcase and you would not condemn it?—That is a question that

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Dr. A. 4692. You have no absolute rule on the subject?—No.

Hill. 4693. Supposing that you found a tubercle on the costal pleura, and suppose you found tubercles in the lungs, and suppose that on examination of the glands you found traces of the disease, would you or would you not condemn the carcase?—If it was so widespread as to affect the lymphatic glands I should be suspicious, and should probably condemn it.

4694. And if you found on examination, let us say, of the prepectoral glands the commencement of it there?—I am afraid I am not acquainted with the prepectoral glands.

4695. They are up, I understand, near the neck,—would you consider that the carcase should be condemned?—It would depend very much on whether it was limited to these glands, and on the general character and appearance of the meat. If the animal appeared a well-nourished, healthy animal, I should not allow the fact of one or two glands such as you have mentioned to cause me to condemn it.

4696. If you had that, coupled with the unmistakable tubercle on the lungs?—That would be rejected before the animal was allowed to be removed for consumption.

4697. Take the case of virus in the prepectoral gland, and unmistakable tubercle in the pleura and in the lungs?—I have never had that gland submitted to me. I don't know the gland.

4698. We are told that the glands are all connected in a chain. Suppose you found the virus in one of them, or two of them, as the case may be, coupled with unmistakable signs on the pleura and in the lungs?—I think if it is a gland like that—it is only in the chest—I should not condemn the animal if the disease had not become more extensive than that.

4699. And in the groin?—I should not like to be too arbitrary on the point. I should like to see the animal, and know all the circumstances before giving an opinion.

4700. You would like to consider that point?—Yes, to see the animal and know all the facts.

4701. Will you give me the date of your examination of the cow and the bullock?—The 28th.

4702. Did you find that portions of both the cow and bullock had been removed when you examined them—the carcases were not complete?—No; portions had been removed.

4703. Portions of the pleura and portions of the lung?—Yes.

4704. I understand you to say that the bullock retained no traces of tubercles in your view?—I found none at all.

4705. Would you have any doubt that the animal had been suffering from tuberculosis if there had been discovered tuberculous matter in its pleura and nodules in the lungs and poison in the glands?—Of course not.

4706. And you give the same answer, I suppose, with regard to the cow?—Yes.

4707. You have told us that you do not think that tuberculosis can be transmitted by the ingestion of flesh; is that your view?—Yes.

4708. Then why, may I ask you, do you condemn any portion of a tuberculous animal?—Simply as a matter of precaution. I think, nevertheless, that if the food is properly cooked, however tuberculous it is, it can do no harm.

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4709. You think that kills the virus?—Of course, there will be some risk in all these matters. An animal may be tuberculous and its condition not found out. I daresay we consume plenty of beef of tuberculous animals which have not been suspected.

4710. Is it because you are not certain that it would be properly cooked that you would condemn it?—I should err on the side of public safety.

4711. You think there is a certain risk?—Yes.

4712. You assent to the view, I suppose, that it is exceedingly infectious if in milk?—No, I don't think so.

4713. Do you know that that view is generally held?—I think if it were so infectious as it is represented to be, everybody would be tuberculous, because there are so many cows that are tuberculous, and their milk is used.

4714. You think that is doubtful?—Yes; it is very doubtful.

4715. You know, however, that that view is generally held?—By certain scientists; by certain enthusiastic bacteriologists, but not even by all of those.

4715-1. Whose opinions are entitled to respect?—Certainly, and I respect them, but there are other men whose opinions are equally or more entitled to respect who hold a contrary opinion.

4716. Perhaps you will give us the names of one or two authorities who hold that milk with bacilli is not infectious?—I think Koch has that view, and Pettenkoffer, and the veterinary inspector at Alfort, near Paris, and the gentleman who holds the corresponding position at Brussels.

4717. We have heard of these before?—This is all published in the report recently issued on the Paris Congress. That is where I got the facts from. There is no secret about the authority.

4718. Then you do not agree that milk containing bacilli is certainly infective?—I do not.

4719. You have told us that the death rate in Birmingham is coming down?—Yes, very much.

1720. And that particularly in diseases connected with tuberculosis?—Yes.

4721. You do not, of course, connect that with eating meat partially infected, or not partially infected?—No. I simply draw this inference, that as meat is being more used in Birmingham than ever on account of its cheapness, and that as tuberculous disease is proved by competent authorities to be more widespread now than ever among cattle, and as our tubercular death rate is coming down very much, more rapidly than the general death rate, these tubercular carcasses are not doing the injury that some people imagine.

4722. But you do not allow them to pass you?—I said I would allow those with localised tuberculosis to pass, but we public

May 31, 1889. officers have to be very careful, and we rather tend to err on the side of extra precaution than the other way.

Dr. A. 4723. It is all a question of risk?—No doubt.

Hill. 4734. I understand that your city improvements have been very extensive recently?—Yes.

4725. And your death rate is exceptionally low?—Our death rate is 17.5.

4726. That is exceptionally low for a large city?—Yes; the lowest death rate of any large city in the kingdom.

Re-examined by *Mr. McKechie*.

4727. With regard to the danger from this tuberculous food, as it is called, is there any precaution required to secure the public safety other than inspection by competent inspectors supervised by a competent medical officer?—I am sorry to say there is hardly any inspection with us at all. We are worse off in Birmingham, perhaps, with regard to inspection than in any other large town. We have not even a public abattoir.

4728. Yet your tubercular death rate is decreasing?—Yes. We have nearly 300 slaughter-houses, over which it is impossible for two meat inspectors to exercise supervision, and therefore it is fair to infer that there is a large quantity of meat of an unsound character that gets consumed.

4729. So that a great deal of tuberculous food must be taken by the people of Birmingham?—It seems so.

4730. And yet they are so healthy?—That is so. I think the inference is perfectly natural.

Dr. J. W. 4731. I am glad you have told us that, but my question was
Mason. general. If you had to provide for the safety of a town like Glasgow against any danger to be apprehended from this food, would you think it sufficient to appoint at the slaughter-houses and markets competent inspectors, supervised by such a competent medical officer as, say, Dr. Russell?—Yes, quite sufficient.

Dr. J. WRIGHT MASON, *sworn*, examined by *Mr. McKechie*.

4732. You are a bachelor of medicine and master of surgery of the University of Aberdeen?—I am.

4733. You have also, I think, taken a diploma in public health at the University?—I have. I am also a member of the Royal College of Surgeons of England.

4734. You are the medical officer of health for the town of Hull?—Yes.

4735. In that capacity are you consulted by the officers about the passing of food at the slaughter-houses?—I am.

4736. Are carcasses sometimes condemned?—Yes.

4737. What do you do in cases of tuberculosis?—We pass animals affected with localised tubercle of the lung in the first stage.

4738. Suppose the tubercle affects more than the lung?—We pass the carcass as fit for food.

4739. Although the tuberculosis affects more than one internal organ?—Yes. May 31,
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4740. So long as it is localised?—Yes.

4741. Do you know what is termed generalised tuberculosis? Dr. J. W.
Mason.
—Yes.

4742. What do you do in that case?—We order the destruction of the animal.

4743. When you reach that condition, I suppose the animal becomes emaciated?—Yes, becomes a “waster.”

4744. And really is not fit for human food?—Certainly not.

4745. Have you seen the two carcasses in this case?—Yes; I saw the carcass a bullock weighing about 46 stones, in good condition.

4746. When did you see them?—On the 29th.

4747. We know it must have been a fortnight old before you saw it; did you see any evidence of tuberculosis about the bullock?—I did not.

4748. You know the nodules characteristic of this disease?—I do.

4749. Did you look carefully for them?—I examined the bullock carefully.

4750. Were they there?—No, not in the portion I examined.

4751. But you examined the whole?—I did.

4752. And they could not have been there without you seeing them, I suppose?—I think not.

4753. Would the carcass of the bullock have been condemned in Hull?—No.

4754. What do you say as to the flesh of it?—It was in good condition—wholesome food.

4755. Would you say first-class?—Yes, good meat.

4756. Tell us about the cow?—I also examined the carcass of a cow.

4757. You found tuberculosis there?—I did.

4758. In what condition?—There had been adhesion evidently of the lung to the pleural lining on the left side, consisting of a patch of about six inches; in the patch there was certainly a centre, showing that there had been adhesion of the lung to the pleura, that is to say, the cow had been in what is familiarly known as a “nanberry” condition.

4759. Was the meat suffering from localised tuberculosis?—Yes.

4760. What stage was it at; was it arrested?—Yes.

4761. Might the cow, under favourable conditions as to light and air, have recovered altogether and have lived for a long time?—Yes.

4762. And have been a productive and useful cow?—I think so.

4763. The cow having been slaughtered on the 8th of May as we know, if that event had happened in Hull, would the carcass have been condemned?—The carcass would have been passed as fit for human food.

4764. Just as the bullock would have been?—Yes.

4765. Have you ever known of tuberculosis being communicated

May 31, 1889. to man from any of the lower animals by ingestion through the stomach?—No, I think not.

Dr. J. W. 4766. Do you think it is likely to happen?—I don't think it
Mason. has been conclusively proved. It has been stated, but not conclusively proved.

4767. There has been a good deal of talk about it?—Yes, it has been stated, but it has not been conclusively proved.

4768. But since people have begun to speak of it, the death rate from the tubercular class of diseases has been diminishing?—In my town it has.

4769. And in your town have people begun to eat vegetables and given up eating that animal food?—No. We like good living in Hull.

4770. You don't object to tubercular food where it is localised?—No.

Cross-examined by *Mr. Comrie Thomson*.

4771. Did you notice that some portions of both of the animals had been removed?—Yes.

4472. If you were satisfied that there was found tuberculosis on both pleura of the bullock, and that tubercular bacilli were found in some of the glands, then of course you would alter the opinion that you have expressed?—No. I should consider it possibly localised then.

4773. But so far as your means of observation enabled you to judge, you did not think there was any tuberculosis in the bullock at all?—No, that was my opinion.

4774. I do not wonder at it, but supposing these things had been seen by others and the parts removed, your opinion would change?—Possibly it might.

4775. Would it not certainly change if you believed the persons who said that they saw these things?—If I believed the authority.

4776. If Dr. Russell and Dr. Littlejohn, and the medical officer of health for Greenock, and other medical officers swore that they saw them, and removed the things to subject them to microscopical examination, I suppose you would believe it?—I can only give evidence of what I saw.

4777. But if I tell you that that was seen by others, that would alter your opinion?—Yes, on that assumption I must believe it.

4778. Now, why is it that you do not allow tuberculous meat to go into the market when it has gone beyond the mere local stage? What is the thing you are afraid of?—We find when the lungs only are affected, and it is localised there, that the meat of the animal may be taken.

4779. That is not my question. Why do you keep any meat out of the market when the disease has extended beyond the lungs?—Because it is unfit for human food.

4780. Why?—Because we find it disseminated through the system.

4781. And if it is disseminated through the system and is eaten, it will do mischief to the consumer; that is what you apprehend?—Possibly; it has not been proved.

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4782. But you are afraid of that?—Yes.

4783. And you act as if it had been proved?—Yes.

4784. Because there is a strong probability, so strong as to justify you in the interests of the public health to keep it out of the market?—In the advanced stage of the disease.

4785. That is the thing you are afraid of?—Yes.

4786. Assume also, although you say it has not been proved, that the disease is communicable by ingestion, because you are afraid of it being consumed, you are afraid of mischief being done by the ingestion of the meat and you condemn it?—Yes.

4787. Then ingestion, although it has not been proved to demonstration, is a probable thing, or you would not condemn the meat?—It is highly improbable.

4788. Then why in the world do you keep it out of the market?—In generalised tuberculosis the food might be injurious.

4789. If it might be injurious, that means injurious to the health of the consumer?—Possibly.

4790. What do you mean by possibly; you keep it out of the market because it might be injurious, you grant me that?—Yes.

4791. If injurious to any person, it must be injurious to the consumer; that is the person whose interests you are guarding, is it not?—Yes.

4792. And the consumer could only be injured by it by the process of ingestion; can he take it in any other way than by swallowing it?—No.

4793. That is by ingestion; why could you not have given me that at once? Do you think that the consumption of milk from a tuberculous animal is infective?—I do,—I mean at an advanced stage of the disease.

4794. That is a question of degree—at a certain stage of the disease?—Yes.

4795. Then at a certain stage of the disease milk becomes infective?—Yes.

4796. The extent is a matter about which you and gentlemen of your profession must exercise discretion; it is a question of degree?—Yes.

4797. There is a line that may be passed where this milk becomes infective?—Yes.

4798. That means that it will be injurious to the consumer if he takes it?—In the raw state.

4799. It is injurious to the consumer?—Yes.

4800. By ingestion?—By ingestion.

4801. Can you give me any reason why the consumption of the meat of a diseased animal should not be infective as well as the consumption of the milk?—It has never been proved.

4802. But can you give me any reason why it might not?—It is usually cooked before being taken. People would not take it raw as they might do milk.

4803. Why don't you pass it all, because it would be all cooked?—In the advanced stage of tuberculosis the meat will be in such a condition that a person would not buy it. It is emaciated.

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Mason.

May 31, 1889. 4804. Do you mean to say that the reason you do not pass it is because nobody would buy it?—No.

Dr. J. W. Mason. 4805. Then, what is the meaning of your observation? Is not the reason why you keep it out of the market because you wish to protect poor people against themselves, is not that it?—Yes.

4806. Then, can you give me any reason why, if infection is to be got from the milk, infection should not be got from the meat, except that the cooking may prevent the mischief?—No.

4807. Would roasting prevent the mischief certainly?—Yes, I think so.

4808. Then, why do you not give it to them to roast, if the roasting will prevent any mischief? You see you are in a hole there, Doctor.

Re-examined by *Mr. McKechnie.*

4809. Is it the case that the meat, when tuberculosis is generalised, is very nasty to look at?—It is.

4810. And not pleasant to eat?—No.

4811. It is not nourishing beef?—No.

4812. I don't suppose there would be much demand for it even if you passed it?—No.

4813. Now, whether the bullock had tuberculosis or not, have you any doubt at all that the flesh was sound?—I believe the flesh was perfectly sound.

4814. And even assuming that it had tuberculosis, was it, in your opinion, localised?—Yes.

4815. And even assuming that it had tuberculosis, would you have, in Hull, passed the carcase of the bullock?—Yes.

4816. Were any parts absent which would prevent you coming to a proper conclusion as to the condition of the animal?—No.

Adjourned till to-morrow at 10-30 a.m.

Saturday, 1st June, 1889.

EVIDENCE FOR RESPONDENTS — *continued.*

Dr. JOHN DOUGALL, *sworn*, examined by Mr. M'Kechnie.

Dr. J.
Dougall.

4817. Are you a doctor of medicine and master of surgery and a lecturer on *materia medica* in the Medical School of the Royal Infirmary?—Yes.

4818. You are also a Fellow of the Faculty of Physicians and Surgeons of Glasgow, and have been for 16 years medical officer of health for Kinning-park?—Yes.

4819. That is a district of Glasgow, or a burgh near Glasgow?—Yes.

4820. You have no slaughter-house there and therefore you don't come across the inspection of carcases?—No.

4821. Have you been engaged in experimenting on micro-organisms for many years?—Yes, for a good many years.

4822. And you have written to various medical journals and read papers on such matters before the British Association and other scientific bodies?—Yes.

4823. And have you made experiments in connection with work for Dr. John Gamgee?—Yes; that was during the rinder-pest, in order to determine the power of some substances which he wished to use as disinfectants.

4824. You are the author of various writings and have made original researches into sanitary science and such like?—Yes.

4825. At the request of the sanitary department of the public health of Glasgow—the Local Authority I suppose—have you made experiments with milk?—Yes, I made a few experiments.

4826. For what purpose?—In order to see whether milk exposed to the atmosphere of a room where people slept became contaminated—whether it absorbed the gases or any other deleterious matter.

4827. Are you a believer in what is called the germ theory of disease?—There are two germ theories. There is the vital germ theory—that is to say, the theory that all infectious matter consists of living organisms—and there is the physico-chemical theory, in which its followers believe that infectious matter consists of decomposed organic matter in a peculiar condition of chemical building-up or synthesis.

4828. Which of these theories do you adhere to yourself?—I believe that the physico-chemical theory explains the phenomena of infectious diseases better than the vital germ theory, but they are both theories nevertheless.

4829. Applied to the cases of tuberculosis, what difference does

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 Dr. J. Dougall. it make which theory you accept?—I should say that, applying them both in the first place, you there is decomposing organic matter present in the body, such as degenerate tissues and vitiated excretions.

4830. And the vital organisms attack these?—Yes.

4831. Are those vital organisms, so to speak, always present in the atmosphere?—Always present everywhere. We are inhaling them even in this room, I am sure.

4832. As to the other, the physico-chemical theory, the germs of dead matter, but poisonous germs, are always floating about?—Yes.

4833. And these getting a lodgment upon a degenerated tissue cause disease?—Yes.

4834. Either theory may explain the facts, but you believe in the physico-chemical theory?—I think it explains the facts better than the other theory.

4835. Did you examine the carcasses in question in this case on 14th May?—Yes.

4836. Who were along with you?—Dr. Goldie of Leeds and Dr. Imlach of Liverpool.

4837. Give us as briefly as you can, for we have had it so often, a statement of the condition of the bullock—take the internal organs, and describe what you saw wrong?—In the first place they were in a state of incipient putrefaction. The animals had been killed for about a week, and these organs had not been taken care of, and showed signs of putrefaction; but otherwise they seemed perfectly healthy.

4838. Did you notice anything about the lungs or the membrane below or on either side of the lung?—They seemed all quite healthy—the lungs and the heart, and the other internal parts of on the chest.

4839. As to the flesh of the bullock, take the bullock entirely as you saw it?—

4840. *Mr. Comrie Thomson.*—You need not trouble about that. There is no doubt that the flesh of the bullock was apparently good.

4841. *Mr. McKechnie.*—Did you see any sign of tuberculosis in the bullock?—No.

4842. In the cow there was tuberculosis?—Yes, I found that.

4843. Describe what the appearance of the internal organs was?—The lungs were tuberculous. There had been a section cut off, and they had been divided by some person previously. I found decidedly a considerable number of tuberculous deposits in the lungs, but that was all.

4844. You examined under the microscope the flesh of both animals?—Yes.

4845. You took pieces with you?—Yes.

4846. Have you ever seen Koch's bacillus?—Yes, I have seen it in mounted specimens, but I have never gone in for staining it for myself.

4847. Did you find any bacilli in the flesh of either animal?—The muscular tissues of both animals seemed perfectly normal in structure.

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4848. You made a minute microscopical examination?—I did.

4849. In several places?—No; only of the muscles of the back.

4850. And you found no trace of this bacillus?—No.

4851. Did you find any trace of disease caused upon the physico-chemical germ theory?—No.

4852. Any trace of disease at all?—None in the muscles whatever.

4853. Would you have passed the flesh of both animals as fit for human food—Well, I think so, as far as I have any experience of the matter.

4854. Have you any doubt about it?—No; I would be quite prepared to eat a portion of either of them.

4855. Did you see any tendency to softening in the flesh of either animal?—No; the flesh was perfectly firm and good.

4856. Any sign of emaciation?—No; none whatever—quite the reverse. The kidneys were loaded with fat, and the fat was largely distributed.

4857. Are you speaking of both animals?—Yes.

4858. You have made a study of tuberculosis?—Not very specially, but I see a very great deal of it.

4859. But your attention has been called to it almost daily?—Yes, daily.

4860. And you must have studied it if your attention was called to it daily?—Yes; but I am not a specialist. There are some men who go in for it specially.

4861. From your experience, how is tuberculosis caused—originally set agoing in the human system, or in the animal system?—I believe it begins, in the first place, from bad hygienic conditions—not only so, but it is frequently, I have no doubt, transmitted—I mean that it is hereditary.

4862. *Sheriff Berry*.—Is it the disease that is hereditary?—The disease itself is hereditary.

4863. *Mr. M'Kechie*.—In the report of the Privy Council Commissioners we have two theories of transmission from the ancestor. One is that the actual disease itself is transmitted, and the other is that the predisposition is transmitted—which of these do you believe?—Do you mean by the actual disease, the virus?

4864. They say that they have seen the bacillus in the ovum of the rabbit, or among the spermatozoa of some other animal, and the other is an inherited predisposition?—I don't think it is possible that the virus could be transmitted from the parent to the offspring.

4865. Then, is it a pre-disposition?—Simply a pre-disposition.

4866. *Mr. Comrie Thomson*.—The thing that is hereditary is the pre-disposition?—Yes, the tendency or condition of the body.

4867. *Mr. M'Kechie*.—Your Lordship will find, in paragraph 30—"In favour of the latter it may be said that Baumgarten "has actually, in the rabbit, observed the bacillus within the "ovum, and, further, that the bacilli have, by different observers, "frequently been seen mingled with active spermatozoa"—that

June 1, 1889. is the theory that you don't accept?—No; I think it is too theoretical to carry it out to its logical conclusion. We have no evidence of tubercle from inoculation.

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4868. What is the predisposition towards?—It is simply that the offspring has never reached the normal standard of health, and there is a predisposition towards degeneration of the tissues.

4869. And a predisposition towards disease which the germs you speak of, or the bacilli, may readily affect, whichever theory is true?—Yes.

4870. And, in your judgment, is this predisposition the real original trouble?—Well, you cannot get the bacilli to grow unless you get a suitable soil.

4871. And that predisposition cultivates, or may cultivate for them, the suitable soil?—Yes.

4872. When they get to the suitably cultivated soil it is affected?—Yes.

4873. Have you ever known a case of tuberculosis which has been caused by drinking tuberculous milk?—No, and I have seen hundreds of cases.

4874. If other observers have found or met with such cases, how would you explain them?—I should say that the milk had come from a cow whose milk gland was seriously wrong with tuberculosis.

4875. If the milk is taken from a cow whose udder is affected with disease, the milk may have been affected by the condition of the udder itself—do you know that the hands of dairy-maids are often so affected?—Yes.

4876. And you know that we have the theory of vaccination from that?—Yes.

4877. And the condition of the udder may bring the disease?—Yes.

4878. And I suppose it is not impossible that the person who brings the milk may bring the disease?—No. It is also very possible that the milker may give the disease to the cow—to follow out the theory.

4879. Do you know that there are diseases very commonly communicated by milk to the human system?—Yes; I think I was about the first in Scotland, along with Dr. Russell, who showed that.

4880. What diseases were those?—Typhoid fever, scarlet fever, cholera, and, I should say, any of the zymotic diseases.

4081. Is there any doubt that these diseases are propagated by germs—take typhoid fever, for instance?—Yes, there is a doubt, by living germs.

4882. There are no bacilli in those diseases?—They have not been found.

4883. In your opinion, are those diseases caused by living germs, or by the germs of the physico-chemical theory?—The germs of the physico-chemical theory.

4884. That is your explanation of it?—Yes.

4885. And those diseases affect people who have inherited nothing wrong at all events from their ancestors?—Yes; nothing wrong.

4886. If milk ever does cause tuberculosis, what would you say as to the advanced condition in the cow?—I should say that it would be general. It would be a very advanced case of tuberculosis—general tuberculosis.

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4887. It is possible it might so happen?—I think so.

4888. What would you say as to the possibility of life in Glasgow at all, if milk is tuberculous, and carries tuberculosis to man?—I don't understand the question.

4889. Everybody in Glasgow drinks milk?—Yes; but I think there is a very little tuberculosed milk in Glasgow, because, when the udder becomes tuberculosed the cow becomes sterile.

4890. But you accept of the theory, that about 20 out of every 100 cattle are affected with tuberculosis in Glasgow; what do you say of life in Glasgow under these circumstances?—If the udder is only affected——

4891. Assuming the theory that if a cow is tuberculous at all, and that 20 out of every 100 cows are tuberculous—and that the milk of a cow tuberculosed to any extent, carries it to the system, what do you say as to the possibility of life in Glasgow?—I don't think there is much harm coming from a cow of that kind, if the disease is localised.

4892. You don't see the question, but I will not press it; have you considered the question of the possibility of tuberculosis being given to man by ingestion of flesh into the stomach; what have you to say to that?—I think it is very improbable.

4893. Have you ever come across a case of it—would you say it is impossible?—Scarcely.

4894. Nothing is impossible?—Nothing.

4895. And it is in that sense that you say that?—Yes.

4896. What do you say about the bacilli of tuberculosis in the blood of cows?—I don't think it possible that they can exist in the blood or in the muscles either.

4897. And you say that from your own experiments and observation?—Yes.

4898. It may exist in the lungs, I suppose?—Yes.

4899. How does it get there?—I should say by inhalation.

4900. Whichever theory is true, and I gave you the two theories, is it the case that all animals that breathe must be continually inhaling innumerable quantities of living and dead germs?—Yes.

4901. Everywhere?—Yes, every day and every minute.

4902. So that the bacilli or germs must be always going to the lungs?—Yes, but a healthy lung will throw them off.

4903. Suppose the bacilli to be in flesh, and the flesh to be cooked, and then to be subjected to the acids in the human stomach, have you any fear at all that that would affect the life or health of a man?—Not the least.

4904. Even if the man had inherited a predisposition to tubercle?—I don't think it would affect him.

4905. No danger whatever?—None.

4906. You know what is called localised and generalised tuberculosis?—Yes.

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4907. Does localised tuberculosis at all affect the whole system?
—No.
4908. Is it curable?—Certainly.
4909. And has often been cured?—Yes.
4910. Do you know what are called the nodules of tuberculosis in cows and animals?—Yes.
4911. When you went to examine the animals on 14th May, did you see them on the cow?—Yes, in the lungs.
4912. In the bullock?—No.
4913. Did you look for them?—I made a general examination; yes, I looked for them.
4914. Of course, you looked for them?—Yes.
4915. You went there for the express purpose?—Yes.
4916. Were they there?—No.
4917. Would they have disappeared by the 14th of May?—No.
4918. So that if they had been there before the 14th they would still have been there, unless somebody had removed them?—Yes.
4919. Have you made experiments to show that tuberculosis cannot be received into the human constitution, or the animal constitution, unless there is a predisposition?—Yes.
4920. What do you found your opinion upon?—Upon my reading, and upon my experience and practice.
4921. That there must be a suitable soil?—Yes.
4922. Have you made experiments to ascertain the length of time and degree of heat which would kill the bacillus?—No.
4923. When tuberculosis is generalised in an animal, would you condemn it?—Yes, decidedly.
4924. Why?—Because I consider that it is quite unfit for human food, in respect that it simply consists of fibrous tissue and water. All the valuable nutritive matter is gone.
4925. You prepared two tables on the subject of the death-rate from tubercular diseases?—Yes. (Tables now produced.)
4926. These tables are excerpted by yourself, and are true and correct?—Yes.
4927. They show, first, the deaths in Glasgow from tubercular disease at four periods of life during the following ten years, and you begin in 1879; the other is an abstract of deaths from tubercular disease in eight of the chief towns in Scotland for the same period. What inference do you draw from these tables?—That the tubercular death-rate has very greatly declined during the last ten years, that is to say the death-rate from phthisis, tubercular meningitis, scrofulous diseases, and tabes mesenterica, has greatly declined.
4928. During that time there has been no change in the rule as to condemning the carcasses or killing of animals, in Glasgow at all events?—No, I don't think so, in Glasgow.
4929. And much greater attention has been paid to the health of the people in other ways?—Yes.
4930. Do you put it down to that?—Yes, and the excellent supervision by the medical officer and the sanitary inspectors.
4931. Particularly in Glasgow?—Yes.

Cross-examined by *Mr. Comrie Thomson.*

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4932. I am glad you are not infected with the *odium medicum*. Are you a medical officer of health at present?—No.

4933. How long is it since you were?—About twelve months.

4934. The district for which you were medical officer does not have a public slaughter-house?—No.

4935. What experience have you had in making *post mortem* examinations of unsound cows?—I never made a *post mortem* examination of a cow in my life.

4936. Or bullock either?—No.

4937. I see that you read an address at the opening of the Infirmary School of Medicine here, in November, 1881, in which you deal with this subject?—Yes.

4938. Am I right in supposing that this address was delivered, or at least was prepared before the publication of Koch's discovery of the bacillus?—I think it was, but I don't know the date of the address.

4939. It is November, 1881, and I don't see any reference to Koch's discovery?—That was the year before Koch's discovery.

4940. And these opinions contained here were expressed by you before Koch's discovery?—Yes.

4941. I notice that you say this—you speak in a perfectly scientific manner as to the germ theory, and as to the physico-chemical theory, and then you say on page 337 of the *Glasgow Medical Journal*, Vol. xvi:—"This, at any rate, is certain—that
"until the alleged specific organisms of such fluids entirely
"separated from the fluids, with their life conditions maintained
"intact, and the fluids entirely separated from the organisms,
"with their physical and chemical states unaltered by manipulation
"and oxygen during filtration, are inoculated into healthy animals
"and the results noted, it should be held as undecided which
"constitutes the actual virus;" and then you say: "I admit that
"presently the germ theory seems most in favour, and if its adherents proceed as they are doing, we shall soon have disease germs
"enough, these being apparently blamed as the cause of every
"pathological state where they are found, and that is in every
"pathological specimen, animal and vegetable, and moreover, for
"many diseases in which they are not found; and they are always
"looked on by the germ theorists as the cause of these states
"and diseases, but never as the result. While speaking thus of
"the germ theorists, it is far from my desire to disparage their
"arduous and interesting labours. On the other hand, the brilliant
"and patient researches of Pasteur, Klebs, Koch, and others, in
"France and Germany, and of Sanderson, Lister, Roberts, Ogston,
"etc., in Britain, command the admiration of every purely scientific mind, and seem presaging results which, if realized, will be
"the means of preventing, both in man and the lower animals, an
"enormous amount of disease, and an immense number of deaths"
That you say, and nothing can be more admirable than these sentiments in the then condition of scientific knowledge. I want to point out to you that I find Koch in 1884, says on p. 183 of

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his book—"In the experiments made with pure cultures, therefore, tubercle bacilli only, freed from all contamination with the original morbid products, can have been the cause of tuberculosis. But that proves the truth of the proposition that tuberculosis is an infective disease depending on the presence of tubercle bacilli. It may certainly be said, and indeed it has been said, that tubercle bacilli are one cause of the occurrence of tuberculosis, but that other things, *e.g.*, other micro-organisms, may also have the power of inducing tuberculosis. This statement is erroneous, because, as we have seen, in all cases of true tuberculosis tubercle bacilli are present, and the manner of their appearing further proves that they stand to the disease in the position of the cause." Then I find that Dr. Fleming says in his work published in 1883, p. 89—"From his researches, Koch concluded that the presence of bacilli in the tuberculous masses constitutes not only a concomitant fact in the tubercular process, but that it is the cause, and that we should see in the bacilli the cause of tuberculosis—a cause which had hitherto only been suspected, and which presents itself to us in the form of a vegetable parasite." I merely point out to you in point of fact, although it may not be satisfactory to your mind, Koch and others seem to have made their experiments between 1881 and 1883, which speaking in 1881 you desiderated; that is so, but still you were not satisfied?—No.

4942. But the position you take up, which I need scarcely say, is a very scientific one, the theory which you were partial to is also merely highly probable?—Yes, but it is not with reference to the theory, but with reference to the experiments that I am not satisfied.

4943. I think you said that both views were theories?—Yes.

4944. The one to which you lean has not been proved?—No.

4945. Now, you said the bacilli cannot, in your opinion, exist in the blood or in the muscles?—Yes.

4946. I must ask you whether it has been brought to your notice that very eminent men have declared publicly that they have seen bacilli in the blood and in the muscles; were you aware of that?—Yes.

4947. It is a question of fact and not of opinion; a man has either seen them or not, and if a man in the highest position says that he has seen them, I suppose you would not dispute it?—Well, they may have seen them, but they could not be there long.

4948. That I cannot tell, but your view and what you said was that bacilli cannot exist in the blood and muscles?—Yes.

4949. But here is what Mr. Cope, addressing Dr. Fleming, at page 167, says: "You, Mr. President, are well aware that recently a discussion has taken place in Paris on this point, and it has been shown by M. Bouley that this disease is not only found to exist in the lung, but also in the muscular structure. Now, instead of, as has been suggested, allowing certain portions of an affected carcase to be consumed as human food,

"I think it would be more consistent to lay down a rule that, if an animal should be found to be affected with tuberculosis no part of its carcase should be so consumed"; and then Sir Charles Cameron, who was at the head of the profession, says this in the blue book, page 252, Q. 7930—"In the lungs, of course, principally; but also the whole of the peritoneal cavity I have seen covered with tubercles. Q. 7931. Have you seen it in the alimentary canal?—Yes; they often call them warts; the butchers speak of them as warts. Q. 7932. "Have you seen it in the generative organs?—Yes. Q. 7933. "Have you seen it in the muscle itself?—Yes, not often; it is quite exceptional." And then he gives his reasons why he arrives at the conclusion that the whole animal should be destroyed. Then Klein is an authority, is he not? He has been very much abused because he wrote to the *Glasgow Herald*, but I don't know that that makes a man any the worse. In Klein's book on Micro-organisms, page 168, he says, "The other equally important part of Koch's discovery, namely, the artificial cultivation of the tubercle bacilli and the production with them of tuberculosis, has also been verified by Weichselbaum. Weichselbaum also ascertained that in acute miliary tuberculosis of man the blood contains the bacilli." I merely put it to you that Bouley, Sir Charles Cameron, Klein, and Weichselbaum—I suppose he is a swell, but I don't know—have all found the bacilli in the muscle and in the blood, and your statement is that they cannot long remain there?—No, it is impossible that they can, because the whole blood rushes through the body once every minute; but suppose it did not circulate so rapidly, the bacilli would die in a short time, because they must have a resting-place. All micro-organisms fail to breed or propagate themselves unless they have a resting-place.

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4950. And the blood takes him along, and he stops and commences his noxious work?—It is not in the muscle. That is next to impossible.

4951. But it has been found?—It must have been very exceptional, because the muscles are acid, and are made for motion.

4952. Therefore, when he proceeds to make his alkaloid, that would be destroyed by the acid of the muscle?—They must have an alkaline soil to live in, and it is only in alkaline excretions where you find these bacilli.

4953. But still you grant me that you are not quite prepared positively to assert that the bacilli may not be found, even although they may be a short time in the course of transit?—There is nothing impossible.

4954. But the muscle, on account of its not being alkaline, does not afford the soil on which they can flourish?—I do not say that absolutely in the meantime, but allow me to explain. The muscles are slightly alkaline when at rest, and become slightly acid when in motion, but after death they are always acid, and the bacilli are certain to be destroyed, and hence they are perfectly innocuous to anyone who consumes the flesh.

4955. *Mr. McKechnie*.—It is all perfectly right, but I rather

June 1, 1889. forget if any person has said that there were bacilli in the muscle in this trial.

Dr. J. 4956. *Mr. Comrie Thomson*.—None in the witness box.

Dougall. 4957. *Mr. M'Kechnie*.—I do not know that anyone has said he had seen them in the blood in this trial.

4958. *Mr. Comrie Thomson*.—Not in the witness-box.

4959. *The Witness*.—Allow me to quote a sentence from Hamilton's Pathology—"The muscular and fibrous tissues enjoy almost "complete immunity from tuberculosis, and when it occurs in them "it is a local disease."

4960. *Mr. Comrie Thomson*.—What is the date of that?—1889. Hamilton is Professor of Pathology in the University of Aberdeen. The page is 489.

4961. It is human pathology that the book is about?—Yes.

4962. But here is very nearly as big a book as yours—"A "Manual of Veterinary Sanitary Science," by Dr. Fleming, in which he says, "Muscular tuberculosis is now and again witnessed." I put my book against yours, and it is man against beast?—Here is another statement from Hamilton. "The author has met with "a case in which both lungs were rendered perfectly solid from an "extremely acute eruption of tuberculosis, but from which not a "vestige of tubercle bacillus could be discovered after long and "careful examination."

4963. Exactly, because they had gone away, but your theory proceeds on rejecting the specific organism, does it not—I would like to know that, because that makes all the difference. The evidence you have been giving us proceeds upon this basis that you do not accept the specific organism theory?—I neither accept it nor deny it. I neither accept nor deny any of these theories. I believe that they are both right and both wrong, but I think the physico-chemical theory explains the facts better.

4964. Do I understand that you are an agnostic in this matter?—Thorough.

4965. Then you said that you would condemn the whole carcase if the tuberculosis was generalised, and you went on to explain that there would be nothing then but a non-nutritive fibrous tissue to eat?—Yes, and water.

4966. But don't you think that, apart from that, it would be dangerous to eat the carcase of an animal in which tuberculosis was generalised?—Well, I don't think so. I think it has been eaten fifty thousand times in Glasgow.

4967. Tell me why such carcasses are kept out of the market?—Because I consider that they might cause cramp and diarrhoea and vomiting.

4968. Which shows that it does not agree with you?—Yes, but they are in a lower vitality.

4969. I wish to ask you seriously, and I have no doubt you will answer me in the same spirit—apart from the non-nutrition, do you think it would be a safe thing for a person not in the very best health to consume the flesh of a carcase in which tuberculosis had been generalised?—I can scarcely answer that; it might or it might not.

4970. If it might not, would you give the person the benefit of the doubt?—I would be inclined to do that. I would condemn all generally tuberculosed cattle.

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4971. The noxious substance would be introduced into the system?—Yes.

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4972. And might cramp and diarrhœa occur?—Yes.

4973. Both of these indicating that the stuff they had taken did not agree with them?—Yes.

4974. And if it was carried to any excess, the consequence might be much more serious than mere inconvenience?—Possibly, but I am not here to advocate the eating of all tuberculous carcasses.

4975. You say it never occurred to you that tuberculosis would be communicated by milk. I read to you from a report made by Prof. Brown, who is the Principal of the Royal Veterinary College of England, last year to the Royal Agricultural Society, and which is contained in their Journal of April of the present year, p. 323. "It is evident, however, that milk containing bacilli is certainly "infective." You have not made experiments for the purpose of ascertaining whether that is so or not?—No, but I can reason from the statement that is made that milk very rapidly becomes acid, and if there are any bacilli in it they are destroyed by the acid.

4976. *Sheriff Berry*.—You do not agree with the statement that Mr. Thomson has read to you?—It is possible the bacilli may be in the milk.

4977. But that it is infective—that is the point?—I don't think it would be infective, for the reason I have stated.

4978. *Mr. Comrie Thomson*.—You don't agree that it is certainly infective?—No.

4979. I am going to take you to your friend Dr. Hamilton, and I refer you to p. 433. "Milk from tubercular cows seems "to be a certain means of introducing tuberculosis when ingested?"—Yes—"seems."

4980. We are all accustomed to special pleading by a lawyer, but one does not look for that in a doctor. If you had written the sentence, would you not have meant that it was your belief?—I am very careful in making my statements when writing,

4981. But so is Hamilton; he is careful too; he is a professor in the University of Aberdeen, and that is the best place in the country. There are eminent men for whose opinion you have great respect, because you have quoted this book against me, who are of a different opinion from you?—Yes, that is always the case in medical matters.

4982. Life would not be worth living if there was no difference of opinion; if you are wrong about milk, and assume these two gentlemen are right, is there any reason why, if milk when consumed may convey tuberculosis, the meat of a tuberculosed animal when ingested should not also be injurious to the human consumer?—Yes.

4983. What is the reason?—There is the cooking, in the first place. There is the gastric juice, which is acid, which contains hydro-chloric acid.

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4984. Does the milk come in contact with the juice?—Yes; and is a surer proof that the bacillus in the milk is more likely to be destroyed.

4985. But the gastric juice is exuded when anything comes in; it tackles the food and drink, and everything else?—Yes.

4986. Why should it have more power over bacilli in milk than bacilli in meat?—It has no more power over the one than the other, but bacilli in the milk are more likely to be destroyed, because the sugar of the milk is changed to acid, and the gastric juice assists the acid of this milk in destroying the bacilli.

4987. They are more likely to be destroyed when conveyed by milk than when conveyed by meat—is that so?—Not necessarily. What I meant to say was that milk has a great tendency to become acid, and if bacilli are present then the acid destroys them, and if the milk is swallowed the bacilli, if any are left alive, are likely to be killed by the gastric juice.

4988. Then, *multo magis*, the bacilli in meat may survive, because the acid qualities that you have described are not present to such a great extent in the meat?—No. I was going to say that the bacilli in the meat were very likely dead before they were cooked at all.

4989. *Sheriff Berry*.—But Mr. Thomson was excluding cooking altogether; he says, supposing you take raw flesh and milk, it would be more likely that the bacilli would be in the raw flesh than in the case of the milk?—I wish to explain; in the first place, assuming that it is raw meat, the bacilli are likely to be destroyed by the acid of the muscle, and again by the cooking, and certainly they would get their quietus by the gastric juice.

4990. *Mr. Comrie Thomson*.—This book of Dr. Hamilton's, which I am very glad you brought with you, is the latest work on pathology we have?—Well, there may be a little later.

4991. But it is 1889, and you cannot have one much later than that. I am taking my weapons from the enemy's camp. It says on page 482, "There cannot be the slightest doubt that contaminated food may be a fertile source of communicating disease. Ort showed that if rabbits had *perlsucht* tissues mixed with their food they rapidly became tubercular, showing themselves on the larynx, lung, and serous tissues." He does not agree with you?—But you can have tubercle in rabbits without *perlsucht*; you have only to confine them, and they become tuberculous.

4992. You will be a convert by-and-bye.—Rabbits, guinea-pigs, and monkeys are not men and women.

4993. But men are susceptible to disease?—Not nearly so much as these lower animals.

4994. I am going to show you a table that has the approval of a number of scientific persons, in which man is put at the head in the matter of susceptibility. In the report of last year, after hearing a mass of evidence, this conclusion was arrived at by the Commission—"The tubercle bacillus does not attack all domesticated animals equally. Arranging them in order of respective

"liability to the disease, they are as follows:—Man, milch-cows, fowls, rodents, pigs, goats, sheep, horses, carnivora, *i.e.*, dogs, cats, etc. (very rarely)." You don't agree with that?—I read it; I don't know. I have no experience in the matter.

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4995. Then, why did you say a moment ago you did not consider monkeys and so on the same as man. You have no experience sufficient to enable you to contradict that?—No, but Hamilton says, at p. 430 of his book, "Of all animals the rabbit and guinea-pig seem to take the disease most readily."

4996. You need not look at the list; it won't be any better for looking long at it; it will never change; there it is. Who was along with you, besides Dr. Imlach and Dr. Goldie, when you examined the carcasses? Was not Dr. Armstrong of Newcastle there?—I am not sure; there were some practical men.

4997. Are you aware—I have no doubt you saw it in the newspapers—that several medical gentlemen did find tubercle, and also, on microscopic observation, bacilli, in the bullock that you have been speaking about?—I have heard it said they did.

4998. I tell you as a matter of fact that Dr. Russell, Dr. Littlejohn, Dr. Robinson of Greenock, Mr. M'Geoch of Paisley, and Mr. Limont, the latter being a microscopist, have sworn that they found tubercle in the lungs and pleura and diaphragm, and bacilli in two of the glands. Assume that these gentlemen are accurate—not only veracious, but that they are accurate in their statements—of course that would alter the views that you have expressed as to the bullock?—Not much as regards its use for food.

4999. I quite understand that; you still maintain that the bacilli being localised, the carcase was fit for food; but you do not say that there was no sign of tubercle in that bullock?—There was no naked-eye sign.

5000. You did not see them?—No.

5001. But it was your first *post mortem* examination of a beast. Have you ever seen a bacillus except under a microscopic slide?—You cannot see it except there.

5002. Have you ever looked for it? have you ever made a preparation for it?—Yes, I looked for it in the muscle of the cow and the bullock.

5003. You took one from the back?—Yes, a part of one of the lumbar muscles.

5004. The fact that you did not see them does not exclude the idea that others may have seen them?—No.

5005. They are not very easy to see?—No, they are very difficult to see.

5006. Practice helps you in all microscopic examinations?—Yes; but seeing that the bullock was hanging beside the cow, some of them may have altered their place.

5007. Can they jump—now, is that a joke?—No, it is not a joke; it is a very likely thing.

5008. Do you think the bacilli would find their way into a gland embedded in fat, because of the bullock hanging up beside the tubercular cow? You won't go that length, will you?—I wish to know a little about that gland.

- June 1, 1889. 5009. How could they get any gland which was embedded in fat?—They must have been in the lymphatic system.
- 5010. And therefore the idea of their flying from the tubercular cow to the bullock won't help you?—(No answer.)
- Dr. J. Dougall.

Re-examined by *Mr. M'Kechnie*.

5011. If the same knife was used for cutting away tubercular nodules from the cow, and again used for cutting parts of the bullock, may you have transferred the bacilli from one to the other?—Billions of them.

5012. That would explain the whole thing?—Yes.

5013. Have you heard of such a thing as a prepectoral gland? We have no analogue to that in the human subject?—I have heard about it here only.

5014. Did you see that taken away by Mr. M'Geoch?—Yes.

5015. That was the gentleman from Paisley?—Yes, I was there when he took it. I think he called it the "inspector's "gland."

5016. Did he cut it away with a knife?—I cannot tell, but I think so.

5017. Did anything strike you about that?—Yes; the gland was in a state of putrefaction from exposure to the air.

5018. And whether you believe in the germ theory or the bacillus theory as causing disease, where you have putrefaction you have always bacilli?—There are different species of them. We have bacteria-motile organisms.

5019. *Mr. Comrie Thomson*.—Not the bacillus tuberculosis?—No, not the specific organism.

5020. *Mr. M'Kechnie*.—But you have micro-organisms?—Yes.

5021. Produced by putrefaction?—Yes.

5022. It does not follow that the micro-organisms found in a state of putrefaction were the result of the disease of the gland?—They are the concomitants of putrefaction, but I do not think the cause.

5023. Are these micro-organisms really the scavengers of nature?—The scavengers of the atmosphere. I should like to say a word about the gland. It is a well-known fact that all tuberculous nodules soften from the centre to the circumference and not *vice versa*, and this was softening from the circumference to the centre.

5024. *Mr. Comrie Thomson*.—The gland was not visibly tuberculous.

5025. *Mr. M'Kechnie*.—You spoke about micro-organisms being the scavengers of the atmosphere. Are they necessary in order that life may be sustained on this planet at all?—Yes; I believe they are necessary.

5026. You could not live without them?—No; unless we arrested decomposition.

5027. The particles of decaying matter are nearly always present in the atmosphere, and these micro-organisms come and devour it, and render life possible on this planet?—They reduce these particles of decaying organic matter to lower states of chemical combination.

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5028 You spoke of localised tuberculosis. Do you know that in surgical practice you sometimes find tubercles, and you can cut away a part leaving the remainder?—Yes; scrofulous joints and glands.

5029. In some parts of the body there are double organs?—Yes.

5030. Have you known a case of one of those organs being removed for tuberculosis and the other left?—Yes; I have done it.

5031. And was the disease arrested?—Yes; quite arrested.

5032. Does the same thing apply to tubercular or a strumous disease of joints?—Yes.

5033. Would there be any use in operating in these cases unless the disease was localised?—No.

5034. It would be an aggravation to operate on it?—Yes.

5035. When you said that the rabbit was different from man in his capacity or power to receive tuberculosis, were you referring to the stomach of the rabbit as different from the human stomach?—Man is a more highly organised animal, and it is a different thing altogether.

5036. So when a rabbit is experimented on in the flesh, he is very apt to take it?—Extremely susceptible.

5037. I suppose from the mode of life of the rabbit, which is not to be commended, he often inherits a predisposition to tuberculosis?—Yes.

5038. You used an expression that you would condemn all tuberculous carcasses; I understand it; but what did you mean by that?—Where the tubercle was generalised in the system.

5039. You said that your inspection was on the 14th of May, but Dr. Goldie and Dr. Imlach say it was on the 16th?—I was there on the same day with them, and also with Dr. Hime. There is one point that I wish to explain with reference to the functions of these micro-organisms. I say that their functions are beneficent and not malignant, and they are only there when there is decomposing matter.

5040. That is just the scripture “Where the carcass is?”—Yes

5041. *Mr. Comrie Thomson*.—Very small eagles these?—Yes.

5042. Would you excise a strumous joint in the case of a child that you knew to be suffering from tubercle in the lungs?—No; I don't think so.

5043. It would die?—Very likely; the shock to the nervous system would be too much.

5044. You are aware that those who have made bacteria a study are able to determine the bacillus of tuberculosis from other bacilli?—Yes.

5045. You cannot yourself—small blame to you, but you cannot, can you?—I believe I could if I tried.

5046. Are you aware of the staining process by which it is done?—Yes.

5047. Have you ever tried it?—No; but it is a very simple matter.

5048. The bacillus of putrefaction is a different animal from the bacillus of tuberculosis?—Yes.

June 1, 1889. 5049. And any competent bacteriologist could distinguish the one from the other?—Yes.

Dr. J. Dougall. 5050. If it is proved here that the bacilli of tuberculosis were found in these carcasses, it is idle to talk about the bacilli of putrefaction—they are totally different organisms?—(No answer.)

5051. *Sheriff Berry*.—Are they apt to be mistaken?—I don't think so. The bacillus of tuberculosis takes on a peculiar stain, and resists the action of weak nitric acid.

5052. You don't think that they are apt to be mistaken?—I think not.

Mr. WILLIAM ANDERSON, *sworn*, examined by *Mr. Jameson*.

Wm. Anderson. 5053. You are a veterinary surgeon in Glasgow, and a Fellow of the Royal College of Veterinary Surgeons?—I am.

5054. You are also veterinary adviser and inspector for the Local Authority for the county of Lanark?—I am.

5055. In that capacity have you had exceptionally large experience for the last seventeen years in specific and other diseases affecting the lower animals, and particularly affecting the bovine animals?—Yes.

5056. Have you also been frequently consulted by other Local Authorities regarding outbreaks of disease?—Yes.

5057. You have been seventeen years in practice?—Yes; seventeen years an inspector under the Contagious Diseases (Animals) Act.

5058. For the last three years you have had very special opportunities of examining animals before and after death?—Yes, because in Lanarkshire the disease of pleuro-pneumonia has been exceptionally prevalent for the last three years.

5059. And that exceptional prevalence during the last three years has led you to take very particular notice of the changes in the various tissues of the body?—Yes.

5060. Have you, in your experience, come across many cases of animals suffering more or less from tuberculosis, as well as from pleuro-pneumonia?—I have.

5061. Since February, 1887, you have made over 3,000 *post mortem* examinations of cattle which have been slaughtered by order of the Local Authority of Lanarkshire?—Yes.

5062. And it is your duty to superintend the slaughter and disposal of these animals?—It is.

5063. As resulting upon that, you have been constantly in attendance at Moore Street slaughter-house, and have had great opportunities of observing the mode of inspecting carcasses there?—I have.

5064. Is tuberculosis a common disease in milk stocks in and about Glasgow?—It is.

5065. How many would you say of the milk cows in and about Glasgow are affected with tubercular disease?—Twenty per cent more or less.

5066. What leads it to be so common among milk cows?—A long-continued lactation, and also the general draining of the system for the purpose of deriving milk, and the want of fresh air and exercise.

5067. From your observation have you seen that there are two different forms of tubercular disease?—Yes. June 1,
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5068. How would you describe these? — Localised and generalised tuberculosis. Wm.
Anderson.

5069. Are these perfectly well recognised forms of the disease?—Yes.

5070. Perfectly distinct from each other?—Yes.

5071. And constantly recognised in practice by those whose duty it is to inspect the carcasses of dead animals?—Yes.

5072. Now, with regard to animals affected by generalised tuberculosis, what would you say with regard to them as to their fitness or unfitness for human consumption?—I would say that they were unfit for human food.

5073. Why?—Because the disease is generalised and the flesh will consequently be noxious, and owing to the degenerated animal material which must be in it.

5074. It will be unsound flesh?—Yes.

5075. With regard to localised tuberculosis, what would you say as to dead animals locally affected?—I would say that the disease was local, and therefore the rest of the animal was perfectly innocuous.

5076. Do you think it right that the flesh of such animals should be thrown away?—No, it is not right.

5077. Would you regard that as waste?—Decidedly.

5078. I think, on 9th May, you were asked to examine in Moore Street the two carcasses in question in this case?—Yes.

5079. Were you informed that these animals had been killed the previous day?—I was.

5080. Taking the bullock first, how would you describe it as to its general condition?—It was an extra well nourished and finished carcase.

5081. What you call finished is a bullock that has been topped off with good food?—Yes.

5082. In prime condition for the butcher?—Yes.

5083. Did you examine the various parts of the carcase and of the viscera?—Yes.

5084. Did you find any trace of disease?—No trace of disease except a film of lymphoid matter on each pleura.

5085. The costal pleura?—Yes, particularly on the left side.

5086. To what did you attribute that appearance?—To a previous inflammatory action of some kind.

5087. What is known as pleurisy?—Yes.

5088. Were the lungs and other internal organs of normal size and consistency?—Yes.

5089. And so far as could be discovered by anything short of a microscopic test, the animal was perfectly healthy, with the exception of the pleuritic affection of which you saw a trace?—Yes.

5090. Taking Mr. Moore's cow, what was it like; how would you describe it generally?—I found the carcase of it that of a well nourished cow.

5091. Aged?—Yes, not an old cow, but a mature cow.

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Anderson.
5092. How old?—Six years old, perhaps.
5093. Was there plenty of interstitial fat between the layers of lean flesh?—Yes.
5094. And plenty of internal fat about the kidneys, and inside the animal?—Yes.
5095. When examining it did you find any trace of tuberculosis?—Yes, I found decided traces of tuberculosis.
5096. How would you describe the case of the cow with reference to disease?—It was localised tuberculosis.
5097. Tell us what you found, shortly?—On the left pleura I found a few pedunculated fibroid growths, and also lymphoid matter adhering to the pleura, and on a portion of each lung I found a number of nodules of caseous matter, which indicates that tuberculosis had been present.
5098. And that the tubercles there were become calcareous?—Yes.
5099. What does that show as to the progress of the disease?—It shows that the disease had been arrested.
5100. And that, at all events, it was not advancing?—It was not advancing.
5101. Nor spreading?—Nor spreading.
5102. Were all the other organs of the cow healthy?—All except a lesion on the left shoulder, the result of a bruise.
5103. Was the flesh of a normal colour?—Yes.
5104. Was the flesh of both firm?—Yes.
5105. In your opinion, was the flesh of the bullock fit or unfit for human food?—Perfectly fit.
5106. With regard to the cow, can you say whether the flesh was fit?—Perfectly fit.
5107. Would you have eaten it yourself?—I would.
5108. In generalised tuberculosis what is the colour of the flesh of the animal that is afflicted with it?—It is paler than usual.
5109. And watery looking?—Sometimes watery looking.
5110. Have you noticed numbers of animals that have been killed with localised tuberculosis, and the flesh perfectly firm and healthy?—Yes.
5111. And in all these cases do you think the meat was fit for human food?—Yes.
5112. Do you think it would involve any risk to people eating it?—No.
5113. In cases where the disease is localised, can you tell us what is the usual way of getting rid of the infected portions of the inside of the animal?—By stripping off the infected parts.
5114. What is usually done is to strip off the whole of the inner membrane of the body where the affected parts are situated?—Yes.
5115. And in the lung would you strip the lining membrane off the whole of the chest?—Yes.
5116. How is that done?—By nicking the edges of the pleura and pulling it off with the hands.
5117. And carefully rolling it round?—Yes.
5118. Do you think there is any danger in that operation of

the bacilli of tuberculosis or infective diseased matter adhering to the sound sides of the beef?—Not at all. June 1,
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5119. Care is taken that that should not happen?—Yes. Wm.

5120. On 10th May you gave a report on these animals?—I did Anderson.

5121. (Shown report now produced.) Is that the report about the cow?—It is.

5122. Is that a true and correct report?—Yes.

Cross-examined by *Mr. Ure*.

5123. Do you profess to have investigated the causes of this disease with which you are so familiar?—Yes.

5124. What is the cause?—The principal cause is heredity.

5125. Anything else?—Inhalation.

5126. Inhalation of what?—Of the specific germ.

5127. Of the tubercle bacillus?—No, of the specific germ I say.

5128. Its name, please?—The pabulum of the bacillus tuberculosis.

5129. Pabulum means food in Latin?—Yes, it is the pabulum along with the tubercle bacillus.

5130. Is it the pabulum or the tubercle bacillus or both?—It is both, or pabulum may do it in large quantities.

5131. If you have the pabulum alone, will it do it?—It will, I believe.

5132. What is pabulum?—The pabulum is where the bacillus is situated—the surroundings—the environment of its animal food—the nidus of it.

5133. Did you ever see it?—I saw it under the microscope.

5134. The pabulum?—You can see it.

5135. It is quite visible to the naked eye?—The matter that the bacillus is in.

5136. Is not the pabulum to which you referred perfectly visible to ocular inspection?—A number of pabuli may be.

5137. Have you seen them over and over again?—Seen what?

5138. That which causes the tubercle—is it not a simple question?—It is not a simple question.

5139. Is it by the microscope or the naked eye?—You can see perhaps thousands of them with the naked eye.

5140. And you have seen them?—I have seen them in cases of generalised tuberculosis.

5141. Have you seen them introduced by inhalation or otherwise?—No.

5142. But your account is that the pabulum or nidus which you say enters the animal produces the disease?—Yes.

5143. What is the use of associating with the pabulum the tubercle bacillus if the pabulum will do it itself?—I believe the bacillus is a concomitant of the disease.

5144. It helps it to do the work?—It is the work of degeneration.

5145. Will the bacillus itself do it alone?—No; I don't think it will.

5146. Do they require to work jointly?—Yes.

5147. Would the pabulum do it alone?—It might.

5148. But it will do it if it gets the bacillus with it?—Yes.

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Wm. Anderson. 5149. Does it do it more completely if accompanied by the bacillus?—It depends upon the ground it lies on, and the soil it alights on.

5150. Do I understand that your theory is the result of independent investigation, or does it depend on authority?—It is both.

5151. You have made independent investigation?—I have made inquiry, watched the progress of the disease in diseased stock, and also investigated the cause of the disease by reading, and also by reading about experiments which have been conducted in this country and on the continent.

5151-2. By people eating it?—No.

5152. Be kind enough to give me a reference to one authority which records that the pabulum is the cause of the disease?—Koch says he cannot say whether the bacillus is the cause of the disease or not, but it is certainly present when the disease arises.

5153. Do you represent that seriously?—I do, certainly.

5154. Will you refer me to the book—is that the book called *Selected Essays on Microparasites in Diseases*?—It is Koch's. It is from Koch that I received the information; I cannot say whether it is in this book or from an extract from Koch; but I can assure you that Koch distinctly says that he is not positive whether the bacillus tuberculosis is the cause of the disease or not.

5155. Be kind enough to remember my question. I asked you for your authority that the pabulum entering the animal causes tuberculosis?—My own authority.

5156. Do you recollect that Koch supports you in that?—Yes.

5157. Be good enough to give me the passage?—I would need time to do it. It may not have been in Koch's book that I saw it. It may have been in some of the journals that have extracts from Koch.

5158. Look at p. 153 of Koch's book, the last passage on the page—"In the experiments made with pure cultures, therefore, "tubercle bacilli only, freed from all contamination with the "original morbid products, can have been the cause of tubercu- "losis. But that proves the truth of the proposition that "tuberculosis is an infective disease depending on the presence of "tubercle-bacilli. It may certainly be said, and indeed it has "been said, that tubercle-bacilli are one cause of the occurrence "of tuberculosis, but that other things, *e.g.*, other micro-organisms, "may also have the power of inducing tuberculosis. This state- "ment is erroneous, because as all have seen, in all cases of true "tuberculosis tubercle-bacilli are present, and the manner of their "appearing further proves that they stand to the disease in the "position of the cause"; do you know that Koch wrote that?—I suppose that is his book.

5159. Do you find any authority there in support of the view that pabulum entering the animal causes tuberculosis?—How could you take a single bacillus and inoculate with it? How could he do it? It is the two thousandth part of an inch.

5160. It is a very simple question. You undertook to give me

a passage from Koch supporting your view that the pabulum produces tuberculosis?—I would require time to go over the book.

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5161. Do you undertake to produce the passage?—Yes.

5162. And send it to Mr. Pearson, the Clerk of Court?—Yes.

[In accordance with this undertaking the witness subsequently gave a reference to the following passage from the *Veterinary Journal* for August, 1884, pp. 92-93, as his authority for this statement:—"Koch has solved the problem in demonstrating, by "certain microscopical arrangements and special staining, the "existence of certain minute elements, hitherto unobserved, in "all the organs affected with tuberculosis; these elements are "veritable bacteria, and their presence is characteristic of tuber- "culosis.

"As important consequences follow this precious discovery, we "may allude to it for a moment.

"According to Koch, the bacteria of tubercle manifest them- "selves in the form of threads of extreme tenuity, in length "scarcely one half the diameter of a red blood-corpuscle, and in "breadth at most one fifth of their length. They are non- "motile, without proper motion, and form spores, which are "developed during the life and in the body of the affected "creature. They are never mixed with micrococci or other "bacteria in tuberculous centres protected from the air. Therefore "it is that we find them unmixed in recently-formed tubercles, "though they are often accompanied by other proto-organisms "in sputa or vomicae—in a word, where the air may come into "contact with them.

"In all cases in which the tuberculous affection is at its com- "mencement, and is making rapid progress, the bacteria are in "large numbers; but when the disease is developed slowly, these "proto-organisms are only met with in small quantities in the parts "altered by the disease, and they may even be entirely absent in "the places where the malady remains stationary. Koch does "not wish it to be concluded from the existence of bacilli in the "tuberculous neoplasms that these parasites are the agents which "cause the formation of the growths; for though he is led to "believe that a close connection may exist between them, it is as "yet merely a conjecture, which can only be established as a fact "after further researches."]

5163. You have said that you condemn an animal with gener- alised tuberculosis?—Certainly.

5164 Will you tell me what signs on the animal you regard as decisive of the question whether the carcass is to be destroyed or not?—Dead or alive?

5165. The dead carcass—tell me the signs you regard as decisive of the question?—You would have emaciation, suppura- tion, and extensive degeneration of the tubercles present, and I consider that that animal ought to be buried.

5166. You would require to have visible signs that the flesh was tuberculous before you would condemn it?—Yes.

5167. Would the existence of tubercles on the pleura, and

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5168. Would you require to find out an outward and visible sign on the flesh and the carcase before you condemned it?—Sometimes you would find no alteration on the flesh, and yet I would condemn it, because there must be a great amount of degenerated organic material in that flesh.
5169. And that would be injurious in your view?—It would be.
5170. Suppose you found the pabulum of which you have told us also in the flesh, would that be injurious?—Large quantities would.
5171. Small quantities?—No.
5172. Why would they not?—Because it would go through the ordinary course of digestion without doing any harm.
5173. Have you experimented on the subject?—I believe you experiment on the subject every day.
5174. It cannot be the result of experiments on me—have you experimented on the subject?—I myself have experimented on myself.
5175. Suppose the bacillus that you have told us of was present, would that alter your view?—Not in the slightest.
5176. Is the bacillus in your view entirely harmless?—I believe it is.
5177. In all circumstances?—Unless you inoculate with it.
5178. As far as ingestion is concerned, it is absolutely harmless?—Yes.
5179. You found that lymphoid matter had exuded on the pleura of the cow?—Yes.
5180. Had that anything to do with the tuberculosis under which you thought the cow had been suffering?—I believe it had.
5181. You found similar lymphoid matter on the pleura of the ox?—Not similar.
5182. Might that not be connected with tuberculosis in the ox?—It might.
- 5182-1. But you saw no other sign?—No other sign.

Re-examined by *Mr. Jameson*.

5183. What is pabulum—it is only pabulum with regard to the bacillus—pabulum is just the food that the bacillus thrives upon?—Yes.
5184. And is that pabulum in your view, as I understand it, degenerated organic matter of some kind?—Yes.
5185. In your view that would infect any animal in which it was taken, and it would infect it just as a piece of putrified flesh put into a wound would infect it?—Yes.
5186. By infecting it with the degeneration in the cells of the body?—Yes.
5187. And when you get that degeneration in the cells set up, then a bacillus will find there a congenial home?—Yes.
5188. Just as the bacillus of pus does when a man has got a fester in his finger owing to a thorn?—Yes.

5189. You said that you were not altogether convinced by some of these experiments, because you doubted whether a bacillus could be inoculated into any animal without taking some of its pabulum with it?—Yes.

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5190. Some of the degenerated organic matter with it?—Yes.

5191. What did you found that upon—what is the size of a bacillus?—It is the two-thousandth part of an inch.

5192. Or somewhat smaller?—Yes.

5193. And you do not think it possible for any person to take out a creature of that kind without taking out with him some of the stuff that he is surrounded with?—No.

5194. And which is his pabulum which you have described?—Yes.

Dr. WM. GRAHAM YOUNG, *sworn*, examined by *Mr. Jameson*.

Dr. W. G.
Young.

5195. You are a doctor of medicine of Glasgow University?—I am.

5196. And you have been twenty-nine years in general practice?—I have.

5197. You have been police surgeon to the Eastern Division of the city of Glasgow since 1867?—I have.

5198. During these last twenty-two years have you been called into the meat market and slaughter-house whenever there was a dispute between the police inspectors and the butchers as to whether a carcase of an ox or cow ought or ought not to be condemned as unfit for human food?—Yes.

5199. In that way have you had a great many carcases affected with tuberculosis under your notice?—Yes.

5200. Tell us what your practice has been with regard to carcases affected with tuberculosis?—Where the tuberculosis was general and the carcases emaciated and not nourished they were destroyed.

5201. What did you do with other animals affected with tuberculosis?—If they were fat and well nourished and affected with tuberculosis locally, but encysted or in a latent condition, the parts affected were stripped out and the flesh allowed to pass out for the food of man.

5202. In your opinion was that practice a perfectly safe one as regards the health of the community?—In my opinion it was.

5203. Has the flesh of such animals as were locally affected with tuberculosis passed out of the slaughter-house been good and healthy flesh?—Yes, good, firm, healthy flesh.

5204. And well marbled with fat?—Yes; well nourished and well covered with fat.

5205. That stripping is done just by an incision made by the edge of a knife, and then the inside membrane of the animal being torn down with the hand?—Yes.

5206. Do you think that in the case of that being done there is any danger of the germs of tuberculosis, whether you regard them as living germs or non-living germs, getting into the sound flesh?—I don't think so.

5207. Of course, if you found tuberculosis had eaten through

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- the membrane, and into the flesh, you would reject that?—I would, most distinctly.
5208. If the tuberculosis had got into the flesh through the walls of the inside of the animal, of course you would find a rent or hole of some sort in the membrane; tell me what appearance it would present?—When they are in the condition of being stripped we don't consider them generalised, and therefore the vessels are not soft; they are firm, and in point of fact they are not through the fibrous tissue.
5209. You have not come across any case where you have stripped off and found tuberculosis?—No, I have not.
5210. But if by mistake you were to take such a case, I suppose you would find tuberculosis becoming generalised, and you would expect it to be through into the flesh?—If the nodules were softened and suppurating and cut through, they would go through on to the surface of the flesh.
5211. But you did not find that occur in any of the animals that you had stripped and passed?—Not in my experience.
5212. Were you always able to tell by the general appearance of the animal, and the consistency of the flesh, that the disease had become generalised?—If the disease is generalised, the flesh becomes very pale and soft.
5213. And you can tell by that?—Yes.
5214. And you at once condemn it?—Yes.
5215. In that stripping process is the prepectoral gland stripped off?—It is there.
5216. Do you know where the prepectoral gland is?—It is about the shoulder.
5217. You saw the animals in question here?—I did.
5218. Were you asked to condemn these carcasses?—No.
5219. Did you express any opinion upon them?—Yes; I did express an opinion on them.
5220. At the time?—In consultation, after we left the place where they were hung.
5221. In consultation with whom?—With Professor M'Call and Dr. Russell.
5222. And at the consultation with them you gave your opinion that they should not be condemned?—Yes.
5223. *Sheriff Berry*.—You examined them with them?—Yes.
5224. *Mr. Jameson*.—And do you think that you or these other gentlemen have had most experience in examining the carcasses of dead animals?—I am not aware what their experience in the matter may be.
5225. You have told us yours?—Yes.
5226. What was the condition of the flesh of the cow?—It was firm and well mixed with fat, and the fat itself firm, surrounding the muscle.
5227. Quite sound and healthy flesh?—To my opinion.
5228. Did you notice anything wrong with its chest and lungs?—There were tubercles deposited in the lungs.
5229. Did the disease seem to have got into a chronic stage?—It seemed to me to be in a state of arrest—in an arrested state.

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5230. What led you to that opinion?—Because the deposits were entirely encysted and quite hard and firm.

5231. What was the size of the deposits?—From the size of a very small pea to the size of a bean.

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Young.

5232. And were they there just like a pea in its pod?—Yes, like a pea in its shell.

5233. And you thought that the disease was stationary?—Yes.

5234. Were the surrounding tissues of the cow healthy in appearance?—In my opinion.

5235. With regard to the bullock, did anything occur to you as showing ill health of any kind?—It had appearances on the left side of the chest—to my mind the appearance of having suffered from acute pleurisy.

5236. Could you see with the naked eye any tubercles deposited on it?—I could not.

5237. What was its general condition?—It was very fat.

5238. *Mr. Comrie Thomson.*—You need not press that.

5239. *Mr. Jameson.*—Would you say it was a prime bullock and in prime condition?—Yes.

5240. And the flesh perfectly sound?—Perfectly sound.

5241. Did either of these other gentlemen who examined the carcass along with you point out any sign of tuberculosis on the bullock?

5242. *Mr. Comrie Thomson.*—That should have been put to these witnesses.

5243. *Mr. M'Kechnie.*—I rather think the point was made afterwards.

5244. *Mr. Comrie Thomson.*—Probably I may be allowed to recall them.

5245. *Mr. Jameson.*—Yes, we will have no objection. (To witness) Did either of these gentlemen who examined the carcasses with you point out any sign of tuberculosis on the bullock?—Professor M'Call said that this deposit, what I call the result of the pleuritic affection, was distinctly acute tuberculosis.

5246. You applied your mind to that at the time and did you not think so?—I did not think so.

5247. Were there any nodules?—I saw none.

5248. Did they point any out?—No.

5249. They just pointed to the inflammatory appearance which you thought was due to pleurisy?—Yes.

5250. And so far as you saw there were no nodules to point out?—No.

5251. And you have been accustomed to examine animals and are well acquainted with tuberculosis and tubercle nodules?—Yes.

Cross-examined by *Mr. Comrie Thomson.*

5252. In making up your mind you are guided by the physical appearance of the flesh?—Yes, by the physical appearance.

5253. And you did not take into account the occult processes

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Dr. W. G. 5254. You know what I mean by "occult?"—Yes.

Young. 5254-1. And "processes?"—Yes; but I don't know what you mean to be at.

5255. That is in my own breast—never you mind about that—that is an occult process also.—In passing a carcase I depend on the physical condition and the physical appearance of it.

5256. Do you adopt the theory that tuberculosis has its origin in specific organism?—No.

5257. You do not believe in the bacillus of tuberculosis, and that it is what produces, and what alone produces, tuberculosis?—No, I do not.

5258. You are aware that there is a large body of scientific opinion in favour of that?—I am.

5258-1. If in the bullock it were proved that the bacilli of tuberculosis had been found it would not affect your view?—Not in the slightest with regard to the bullock.

5259. If it were proved that, although you did not see any nodules in the bullock, tubercular nodules were discovered in the lungs and in the pleura and in a part of the diaphragm, that, I suppose, would lead you to think that you had overlooked them, and that the animal was tuberculosed?—If I had no reason to doubt the statement of anybody who says so; but I did not see them.

5260. I quite believe that, but we have had four or five persons, Dr. Russell, Dr. Littlejohn, and two other gentlemen at least, who deponed to seeing a tubercular nodule in the position I have mentioned and it is not likely that they would be mistaken?—I cannot doubt the statements of these gentlemen.

5261. And no more do I doubt the perfect veracity with which you are giving your statement. There was a considerable amount of pleuritis?—There was a considerable amount.

5262. And there is such a thing as tubercular pleuritis?—It is said so, but I have never persuaded myself that it exists.

5263. You don't believe in that, but there are scientific men who say so?—Yes.

5264. Any foreign substance tends to set up inflammation in the body?—No doubt.

5265. And therefore there is no antecedent in probability that tubercle may not set up inflammation?—That may be, according to the theories of some of our distinguished experimentalists.

5266. But you have given your evidence on the footing that you reject the theory that has been adopted by the Departmental Committee of last year—you are aware of the results of their investigations?—Yes, I know something about them.

5267. You know that they arrived at that conclusion?—I am not aware that they arrived at that decidedly.

5268. It is worth your while to be here to get informed about it; here is what they say, after leading a great deal of evidence—that it all comes from the bacillus, and then their conclusion is this—"That although bacilli may be found but rarely in the

“flesh, still the chance of their being present either there or in the blood is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals”—do you reject that?—I do distinctly.

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5269. Is this the first time that you realised that the Committee had reported in that way?—No, I have seen that report. I did not know to what part of it you referred.

5270. Are you aware of a resolution of a French congress of veterinarians that was held last summer?—I am not aware of that; I have heard of it, but I have never seen it.

5271. This is a proud day for you; it was a resolution of 200 or 300 veterinarians and scientific men in which they arrived at the same conclusion as this English Privy Council Committee did, and a decree followed upon that by the French Government which did not go the whole length; were you aware of that?—No, I did not know about it.

5272. Here is what the French Government did—they said, “The flesh of tuberculous animals shall be excluded from consumption (1) if the lesions are generalised, that is to say, not confined exclusively to the visceral organs and their lymphatic glands; (2) if the lesions, although localised, have invaded the greater part of an organ, or are manifested by an eruption on the walls of the chest, or on the abdominal cavity. Such flesh, excluded from consumption, and also the tuberculous viscera, shall not be used as food for animals and ought to be destroyed.” Do you agree with that?—It is too absolute for me.

5273. You are not aware that the French have gone that length?—I was not aware that they had gone that length.

5274. What is the generalising of tuberculosis—is it the poison spreading?—It is these nodules breaking down and spreading, and the pus getting into circulation.

5275. It is just the poison of the disease spreading?—Whatever it may be.

5276. I am not asking you to swallow the bacillus; it is the poison spreading—is that a gradual process?—It may be very slow.

5277. Don’t you think that the poison may be in the flesh a little time before it manifests itself in a visible nodule?—I don’t think so—do you mean in general tuberculosis?

5278. Is the development of generalised tuberculosis a gradual process?—The development of the nodules I admit is so.

5279. But if it is in the process of spreading through the body, won’t the poison, whatever it is, be present in part of the substance of the body for some time before the nodule is formed, so as to be visible to the naked eye—would you give it time to work?—Yes, but the work may be local from disintegration of the surroundings.

5280. But the spreading will be gradual?—The increase will be gradual.

5281. The dissemination of it through the body may be gradual?—I cannot go into the theory of how it is spread.

June 1, 1889. 5282. Although you do not accept the bacillus theory you have no other theory?—No.

Dr. W. G. Young. 5283. And your conduct is based upon the physical appearance of the flesh and not upon a knowledge of the theory of the disease?—Precisely so.

David Allan.

Mr. DAVID ALLAN, *sworn*, examined by Mr. M'Kechnie.

5284. Are you a member of the Royal College of Veterinary Surgeons?—I am.

5285. How long have you been a member?—For over twenty years.

5286. Are you in extensive practice as a veterinary surgeon?—I have one of the largest practices in the west of Scotland.

5287. You live at Clarkston, near Glasgow?—Yes.

5288. Have you seen the carcasses of the bullock and cow in this case?—Yes; I saw both of them on the 10th.

5289. Did you examine the bullock carefully?—I did, both of them.

5290. Confine yourself to the bullock in the meantime. Did you observe any nodules inside the bullock?—There was inflammation of the pleura.

5291. I have asked you about nodules?—No, I did not.

5292. Did you look for them?—I did.

5293. Carefully?—I did.

5294. And they were not there?—No.

5295. You saw some inflammation?—I did.

5296. Well, we know about it. You also saw the carcase of the cow?—Yes.

5297. From your experience would you have condemned the flesh of either the bullock or the cow?—I would not.

5298. The cow had been suffering from tuberculosis?—She had.

5299. Would you say it was localised?—It was a localised case.

Cross-examined by Mr Ure.

5300. What are the signs of tuberculosis?—Tubercle deposits.

5301. And if you find tubercle deposits on any part of the body or internal organs, does that settle the question with you?—It does.

5302. If you do not find anything of the kind, then there is no tuberculosis?—There is not.

5303. What signs do you regard as decisive of the question whether the carcase is to be condemned or not?—When there is localised tuberculosis and a well-nourished carcase otherwise, I would not condemn.

5304. If the flesh in the animal is to outward visible appearance sound, you do not condemn the animal?—I do not.

5305. Even although you find tubercular deposit upon the pleura or lungs or internal organs?—Not if it is localised—if it is not generalised tuberculosis.

5306. Then what do you regard as a sign of it being generalised?—In a suppurated state. June 1,
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5307. And that is visible to the eye?—It is visible. David
Allan.

5308. Without a visible sign upon the flesh you pass it?—Yes.

5309. You don't, I suppose, profess to know anything about the cause of the disease?—

5310. *Mr. McKechnie*.—I have not called him for that.

5311. *Mr. Comrie Thomson*.—We will hold as many as you like concurring with this man.

5312. *Mr. McKechnie*.—I think I must examine them upon these nodules; I must take other two upon that point. I do attach some importance to that matter of fact.

5313. *Mr. Comrie Thomson*.—I am not in the least pressing it, only I am willing to agree to it to save trouble.

5314. *Mr. McKechnie*.—I shall ask them only that one question, and *quoad ultra* they can be held as concurring.

MR. ALEXANDER POTTIE *sworn*, examined by *Mr. McKechnie*.

Alex.
Pottie.

5315. You are a member of the Royal College of Veterinary Surgeons?—Yes.

5316. How long have you been in practice in Paisley?—29 years.

5317. Did you see the carcase of the bullock in this case at Yorkhill?—Yes, on 16th May.

5318. Did you see any nodules of tuberculosis?—None.

5319. Did you look for them?—I did.

5320. Were they there?—No.

[It was agreed to hold this witness as concurring *quoad ultra*, both in chief and cross, with the previous witness.]

MR. WILLIAM BOYLE, *sworn*, examined by *Mr. McKechnie*.

William
Boyle.

5321. Are you a member of the Royal College of Veterinary Surgeons?—I am.

5322. How long have you been so?—Seventeen years.

5323. Where do you practice?—In Glasgow.

5324. Do you also hold a commission in the Queen's Own Royal Glasgow Yeomanry Cavalry as veterinary surgeon?—Yes.

5325. How long have you held that?—Since 1877.

5326. Did you examine the carcase of the bullock in this case?—I did. I think it was on the Wednesday morning.

5327. Did you look for the nodules of tuberculosis on the carcase of the bullock?—Particularly.

5328. Were they there?—No, I never saw them; they were not visible to the naked eye.

5329. If you looked for them particularly and they were not visible to the naked eye, they were not there?—They were not there or I should have seen them.

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Cross-examined by *Mr. Comrie Thomson*.

5330. Who was with you?—Dr. Goldie of Leeds was in the room. There was no one with me; he had examined them the previous day.

5331. Did you notice that a considerable part of the animal about the diaphragm had been taken away?—A portion had been removed, a small portion.

5332. And of the lung and pleura?—They seemed to have been cut into.

5333. And some, what you would describe as a small portion, had been taken away?—Yes, from the costal pleura.

[This witness was also held as concurring *quoad ultra* in the examination in chief and cross of the witness Allan.]

Archd.
M'Intyre.

Mr. ARCHIBALD M'INTYRE, *sworn*, examined by *Mr. Jameson*.

5334. How old are you?—55 years.

5335. You are a butcher in Glasgow?—Yes.

5336. You have been in the butcher trade all your life?—Yes.

5337. And for thirty-five years you have been connected with the slaughter-house in killing and dressing cattle?—Yes.

5338. Did you, on the 9th of May last, see the bullock and cow in question in this case?—I did.

5339. Did you examine both of them?—I did.

5340. Tell us what like the flesh of the bullock was?—The bullock was one of the best carcasses of beef that could have been found in the market that day or the day previous.

5341. Was the flesh of excellent quality?—Excellent.

5342. Well fattened?—Yes.

5343. Did you look at the cow?—The cow was a plainish cow.

5344-5. It was not a first quality of meat?—No.

5346. Not the same as a prime two or three year-old bullock?—No.

5347. But was the flesh in good condition?—In good, firm condition when I saw it.

5348. Did you see any trace of softness or disease in the flesh of either of these two animals?—No.

5349. And speaking from your own experience, was the flesh such as might safely be used for human food?—Safely used for human food; in fact, I would eat any portion of the two carcasses.

5350. There are always various qualities of beef in all markets?—There are.

5351. And the prices range according to whether it is prime quality or second or third?—Yes, it varies from 1s. 6d. down to 6d.

Cross-examined by *Mr. Comrie Thomson*.

5352. Did you see anything wrong with the cow at all?—Yes, I did.

5353. What was the matter with it?—I saw some tuberculous appearances on one of the sides of it.

5354. Did you include that in saying that you would have eaten any portion of it?—Well, if that small portion had been stripped off, I would have eaten any portion of it. June 1,
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Archd.
M'Intyre.

5355. You would have eaten all but the small portion?—Yes.

5356. You draw the line at tubercle?—Yes.

5357. Why?—Because I would not like a tubercle in my mouth.

5358. It would do you harm?—I don't know. I have eaten a good many things in my day, and I appear to be in as good health as yourself.

5359. I daresay I have not been a bit better off than you?—No, I don't think it.

5360. And your view is that, except for the kind of notion of the thing, you would not like to eat a tubercle—you have no reason to believe it would harm anybody?—I don't think it would, as far as I can judge.

5361. And whatever meat is externally sound-looking you would pass, and you would only condemn what was visibly diseased?—What was in a watery, bad state.

5361. But all the rest of the animal that would seem to be sound you would pass?—Anything sound, and apparently in a good, sound condition, I would pass.

Re-examined by *Mr. Jameson*.

5362. When animals are generally affected by disease, is their flesh always more or less watery and soft?—Always.

5363. What is the surest practical test you can have of whether the meat is wholesome or not?—That is our surest test. In all my experience that has always been the test that has been applied.

[It was agreed to hold DUNCAN PERRET, wholesale butcher, DANIEL CUMMING, wholesale butcher, and WILLIAM HARKNESS, dead-meat salesman, as concurring with the last witness both in examination in chief and in cross.)

Mr. PETER FYFE, recalled, and examined by *Mr. M'Kechnie*. Peter Fyfe.

5364. These carcasses were removed to Yorkhill when?—On Saturday, 11th May.

5365. And have they been locked up in the refrigerator there ever since?—They have, I understand.

5366. Of course, you are in charge?—I have not seen them for a few days.

5367. But these are your orders?—These are my orders.

5368. They had been so locked up until this trial began at anyrate?—Yes.

5369. And you have no doubt they are there still?—I have no doubt.

5370. Who has had the key all through?—Mr. Adams, I understand, takes charge of them.

5371. Who is he?—Superintendent at Yorkhill.

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Peter Fyfe.
5372. Then we may take it briefly that the police have the key?—No
5373. The local authority?—Yes, the local authority.
5374. And people have only been admitted by orders?—General orders from your own agents.
5375. Where were the carcasses kept before that?—They were kept in 22 compartment of the Moore Street slaughter-house.
5376. Also in charge of the police?—In charge of the authorities. Mr. Hamilton instructed Mr. Beresford.
5377. Under lock and key?—I understand so.
5378. So that from the time that these two animals were slaughtered, they have been in the custody of the local authority?—They have.
5379. Of course, through their officers?—Under, of course, an order of admittance from the agent for the defendants.
5380. Subject to a right of admittance to the agents for the accused?—Yes; a general order was given to both agents to admit any person who would present their signature.
5381. That is to say, with a view to giving evidence here?—Yes, I understand so.
5382. But you had always officers present when anybody saw the carcasses?—I was not there myself.
5383. Did you give any order to that effect?—I gave orders to the superintendent there to admit any person to the signatures of Mr. Colquhoun and Mr. M'Nab.
5384. The superintendent is here, and we will ask him if you do not know it. Is it not the case that the parties in charge there showed the carcasses to the witnesses, and were present?—They may have been witnesses in this case. They showed the carcasses to any person who had Mr. Colquhoun or Mr. M'Nab's order.
5385. And nobody else could see them?—No.

Cross-examined by *Mr. Comrie Thomson*.

5386. There was a general order that anybody who could present the signature of the agent for either of the respondents in this case was to be admitted to the carcasses?—Quite so.
5387. Without let or hindrance?—Without let or hindrance.
5388. You yourself were not present on these occasions?—Certainly not.
5389. And you do not know whether the persons in charge were actually present when these examinations were made by the witnesses?—I cannot say.
5390. No question has ever been raised as to facility of access not being given to defenders' witnesses?—Not that I am aware of.
5391. And you have never made any refusal to any request made on their behalf?—Certainly not.
5392. *Mr. M'Kechnie*.—That is not the point at all.
5393. *Mr. Comrie Thomson*.—Tell me what the point is, then.
5394. *Mr. M'Kechnie*.—I thought you would have seen it long ago. It is quite plain. It is this, that some witnesses saw the

nodules and some did not, whilst the custody was with the pursuer; that is all I have been proving.

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5395. *Mr. Comrie Thomson.*—(To witness) You are aware that on the examination that was made by the three first witnesses, I think, who were examined for the prosecution, some portions of the bullock's carcase were removed?—I understand that is so.

5396. They were removed by these gentlemen?—Yes.

5397. Who were they?—Dr. Russell, Professor M'Call, and Dr. Young.

5398. And these portions were removed by them and not restored?—No.

5399. Are you aware if other portions were removed?—Yes.

5400-1. By whom?—I cannot say by whom. When I visited the carcasses on the 15th and 17th of the month I noticed a large portion of the lining or nodule that I before observed had been almost all removed.

5402. What day was that?—That was the 15th and the 17th of the month.

5403. *Sheriff Berry.*—On the 17th I understood you to say that a large portion had been removed; was that there on the 15th?—It was present on these two dates of very much the same appearance. A large amount on both these dates had been removed from what I saw on the 9th of the month.

5404. *Mr. Comrie Thomson.*—Between the 9th and 15th considerable portions had been removed?—Yes.

5405. That would make an addition to what had been taken away by the three gentlemen you have named?—Yes.

5406. And then between the 15th and 17th you did not observe much difference?—I could not say that I observed much difference; there was very little left, in fact.

5407. Who removed these portions between the time when Dr. Russell and the other gentlemen took away some and the 15th; you don't know?—I presume it would be some of our witnesses and some of the defenders' witnesses.

5408. You presume it was some of the persons who were admitted to see the carcasses?—Yes.

5409. And they evidently removed what they thought proper?—Just so.

5410. The same opportunity was given to the defendants' witnesses as to the prosecutor's?—Yes.

5411. *Sheriff Berry.*—On what day did Dr. Russell and these other gentlemen visit them?—Dr. Russell visited them with me on the 15th. We went down together to see them in the refrigerator. Dr. Russell went down with me that day and removed a portion of the lung with nodule of the bullock.

5412. *Mr. Comrie Thomson.*—Had any portion of the bullock been removed before the 15th before it went to the refrigerator?—Yes.

5413. By whom?—By Dr. Russell, Professor M'Call, and Dr. Young.

5414. On what day was that?—On the 8th of the month.

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5415. There was some removed for the purpose of inquiry on the 8th, that was from the slaughter-house?—Yes.

Peter Fyfe.

5416. And then another portion was removed, containing nodules, by Dr. Russell on the 15th from the refrigerator?—Yes.

5417. But in addition to these portions that Dr. Russell removed, other portions were removed between the 8th and the 17th, by whom you cannot tell?—Yes; and on the 17th I think I mentioned in my evidence in chief that Dr. Wallace of Greenock removed another nodule from the bullock.

5418. *Mr. M'Kechnie.*—There was nothing removed from the bullock after the 15th, so far as you know, except what Dr. Wallace took?—Not so far as I have judged.

5419. After the 17th were there present in the bullock appearances of inflammation?—I cannot say; I did not see it after that.

5420. On the 17th?—On the 17th there was very little.

5421. You had taken nearly all the inflamed parts away?—All the inflamed parts had almost been taken away, that is in the lining.

5422. And you did not tell the accused that that was being done with a view to getting up evidence against them?—I told the accused nothing of the sort.

5423. And you did not hand the accused portions of the parts taken away?—I did not.

5424. You know that in milk prosecutions the accused always get a sample?—That is under the Food and Drugs Act. It is a part of the statute.

5425. You did not think it praiseworthy to follow that example here?—I never thought of such a thing, because they had the carcasses.

5426. *Mr. Comrie Thomson.*—Was any application made on their behalf?—There was not.

5427. They knew the animals had been seized?—Yes.

5428. And that they were being kept by the police?—Yes.

5429. And they made no application until they applied to get admission for their witnesses?—They did not.

5430. And that was granted?—Yes.

Mr. Jameson.—Then we will put in the various documents from which the witnesses have spoken, and also the books that have been referred to.

Adjourned till Monday, 17th June, at 10.30 a.m.

Monday, June 17th, 1889.

Mr. Comrie Thomson.—My Lord, my learned friends and I have been considering with some anxiety what is the most expedient course to follow in conducting the discussion, and, subject to your Lordship's sanction, we have arrived at this conclusion that it would be better for the case, and probably more convenient for your Lordship, that we should adopt this course, that your Lordship should be addressed for the prosecution in the first place by my learned friend Mr. Ure, that then my learned friend Mr. Jameson should follow on behalf of the respondents, that, if necessary, I should reply, and be followed by my learned friend Mr. M'Kechnie. June 17,
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Sheriff Berry.—Does that meet with the approval of the other parties?

Mr. Jameson.—Yes, under reservation of my right to reply to any point which Mr. Thomson may raise.

Mr. Comrie Thomson.—Quite so. I quite admit that in this case the respondent is entitled to the last word, and if my learned friend Mr. Jameson finds it necessary to add anything after hearing what I have to say, I shall not object.

Sheriff Berry.—Then, in the first place, Mr. Jameson and Mr. M'Kechnie, I suppose you finally close your proof?

Mr. Jameson.—Yes.

Mr. Ure.—I attend your Lordship on behalf of the Local Authority. Although the enquiry, the last stage of which has now been reached, has been somewhat protracted, and the evidence has presented points which are certainly interesting and important and not free from scientific difficulty, I am in hopes of being able to present our view upon the evidence on behalf of the Local Authority within a very narrow compass indeed,—a compass very much out of proportion to the length of the evidence,—because the material facts which your Lordship will have to decide are not, I think, seriously disputed, although no doubt the scientific inferences from these facts we are very much at variance upon. But then, with regard to the latter question, it comes to be ultimately a question of weighing authorities, and therefore not susceptible of very elaborate discussion. Mr. Ure.

Now, I think I shall best consult the interests of my clients and afford to your Lordship the assistance the Court is entitled to expect from the bar by bringing into prominent relief the questions which your Lordship will have to decide, and then marshalling, as best I may, the evidence in support of the

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propositions which I maintain. The main question for the Court is whether the carcasses of the two animals in question, the cow and the bullock, that were seized on 9th May last are or are not fit for the food of man, to use the expression in the 26th section of the Public Health Act. And that question depends for its solution upon two considerations—first, what was the condition of the carcasses when seized by the Local Authority; and, secondly, what is the scientific inference to be drawn from the facts as to the condition of the carcasses? Now, upon the first question, the question of fact, what were the signs of disease upon the two carcasses, we had expected at first that there would have been no serious difference in the evidence; but from the depositions made by some of the witnesses for the defence towards the close of the proof, it appears that there is some dispute in regard to the appearances upon the carcasses, and therefore it will be necessary for me to invite your Lordship's attention, but very briefly, to the evidence upon these two points, (1) was the cow when slaughtered suffering from tuberculosis? and (2) was the bullock when slaughtered suffering from tuberculosis? Now, with regard to the cow, I submit that it was at the time when slaughtered suffering from tuberculosis, and that that fact was evidenced by the following appearances:—(1) That both lungs when examined presented the characteristic tubercular nodules in them; (2) that the costal pleura and the pleura at the diaphragm of the animal exhibited the same signs—tubercular deposit; and (3) that when portions of the organs and the pleura of the animal were submitted to microscopic examination they exhibited signs typical and characteristic of tuberculosis, these signs being in the first place, the presence of the bacillus tuberculosis, and, in the second place, the characteristic lesions in the tissue—that is to say, deviations from the normal condition of the cellular tissue, consisting of what are known as giant cells, and which the expert witnesses in this case have deposed are typical and characteristic of tuberculosis. These two latter microscopic indications we find not only in the lungs and in the pleura of the animal, but likewise—and this is of extreme importance,—by two gentlemen at all events, in the lymphatic glands and the inguinal gland of the animal. I do not propose to read to your Lordship the evidence upon this point, but I give your Lordship a reference to the portions of the evidence which I say demonstrate and establish beyond the reach of gainsay those propositions which I have tabled. In the first place, Mr. Fyfe, the sanitary inspector, at p. 4, questions 61 to 64; Beresford, p. 15, questions 301 to 308; Dr. Russell, p. 23, questions 466 to 468; p. 24, question 479; Dr. Littlejohn, p. 56, question 963; Mr. Robinson, p. 94, questions 1616 and 1657; Mr. M'Geoch, p. 103, questions 1788 and 1789; Mr. Maylard, p. 112, question 1976; Dr. Coats, p. 119, questions 2085 to 2097; Dr. Limont, p. 132, question 2324; Professor M'Call, p. 173, question 2950. Upon this question of fact the evidence for the prosecution derives important aid from some portion of the evidence for the defence, because I find that Dr. Imlach, on p.

207, question 3517, and p. 208, question 3530, agrees in stating that the cow was suffering from tuberculosis when it was slaughtered, and the signs of the disease were to be found in the walls of the chest and the lungs. June 17,
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Mr. Jameson.—Yes, I agree with that; but you said something about the inguinal gland. Who mentions that?

Mr. Ure.—Mr. M'Geoch and Dr. Limont find it. Your Lordship will find that in the report which Mr. M'Geoch put in.

Sheriff Berry.—Is there a distinction between the inguinal gland and the lymphatics?

Mr. Ure.—Yes. The inguinal applies to the gland in the groin of the animal. Your Lordship will find in Mr. M'Geoch's report that he found characteristic signs of tuberculosis in the inguinal gland of the animal, and likewise in the prepectoral glands. I mentioned generally the lymphatic glands; of course, the inguinal and the prepectoral glands are lymphatic.

Sheriff Berry.—I understand they are lymphatic glands, but the terms inguinal and prepectoral indicate their situation?

Mr. Ure.—Yes. Now, upon that evidence I submit to your Lordship that the cow at the time when it was slaughtered was suffering unquestionably from tuberculosis, which affected its lungs, certainly, and the walls of the chest, and that indications were found in the glands.

Mr. Jameson.—Mr. M'Geoch does not say so in his evidence.

Mr. Ure.—No; but you will find it in the report that he produced in order to shorten his evidence.

Mr. Jameson.—I mean that it was not said in Court, or if it was I had not caught it.

Mr. Ure.—Your Lordship will recollect that the report was put to that witness.

Mr. Jameson.—It was put at the end of his examination, and I did not see it before I got up to cross.

Mr. Ure.—The report bears, "In cutting into the prepectoral and inguinal glands and the lungs of the cow I found tubercular deposit in an advanced stage, rendering, in my opinion, the carcasses of both animals unwholesome, unsound, and unfit for human food." Your Lordship may recollect that Mr. M'Geoch conducted that microscopical investigation along with Dr. Limont. With regard to the bullock, I submit that at the time when slaughtered it was suffering from acute tubercular pleuritis, which was evidenced, in the first place, by tubercular nodules found in the left lung, which nodules, when removed and examined under the microscope, were found to contain the bacillus tuberculosis and to exhibit the characteristic lesions; in the second place, that on the costal pleura and on the pleura at the diaphragm there was tubercular deposit found, and that, when portions were taken and placed under the microscope, it was observed by competent observers that the bacilli were present and that the characteristic lesions were present.

Sheriff Berry.—In what?

Mr. Ure.—In the costal and pulmonary pleura, and in the pleura at the diaphragm.

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Mr. M'Kechnie.—That is what he called the skirt.

Mr. Ure.—Yes, the skirt of the animal. In the prepectoral glands of the bullock there was found tubercular deposit, and from these signs the witnesses for the prosecution drew the inference, and I submit rightly, that at the date when it was slaughtered it was suffering from acute tubercular pleuritis. Now, there was a certain portion of the evidence for the defence which was directed to show that at the date when examined the carcase of the bullock showed no signs of disease whatever, and certainly no signs of tuberculosis. My answer to that is that the way in which my case can be met, if my witnesses were competent observers and honest men, is certainly not by saying that the signs of the disease were not present, but that the signs of the disease which were seen by my observers were misinterpreted by them, and that the disease which they assume was tuberculosis was, in point of fact, not that but something else. That, I submit, assuming the honesty and the competency of the observers for the prosecution, was the only way in which the defence could meet the case, and your Lordship knows they did not meet it in that way, but that they adduced certain gentlemen who said that they did not find signs of tuberculosis or of any other disease upon the bullock.

Sheriff Berry.—I think they went a little further than that. I think they said they examined the bullock and had not seen them.

Mr. Ure.—Quite so, from which there are only two inferences deducible, either that the portions of the animal which exhibited the tuberculosis had been removed, or else that these gentlemen were incompetent observers, assuming, of course, the honesty and competence of the witnesses for the prosecution. But the evidence for the defence does not present an unbroken front upon this point, because I find, in the first place, that the attention of the authorities was directed to the carcase of the bullock by the servants of its owner, who, when they had slaughtered the animal, at once saw that it was suffering from some disease or other; and, in the second place, I find that two at least of the witnesses for the defence discovered upon the bullock signs of congestion—discovered, in short, in the walls of the chest the evidences of a disease which they called congestion of the costal pleura, but which they did not examine microscopically to find out whether it was really tuberculosis or not. One of these witnesses was Dr. Imlach, p. 209, questions 3550 to 3554, p. 218, questions 3745 to 3749.

Sheriff Berry.—You say they saw signs of what they considered to be congestion, but that they did not examine it microscopically.

Mr. Ure.—Quite so; and they did not, from the signs that they saw, draw the conclusion that it was tuberculosis at all.

Mr. M'Kechnie.—In the very last passage quoted it is stated that there was microscopical examination.

Mr. Ure.—In Dr. Imlach's case I know that there was microscopical examination.

Mr. M'Kechnie.—It is only to keep Mr. Ure right that I have mentioned it, but in the last reference he has given it is said there was microscopical examination.

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Sheriff Berry.—Where is that?

Mr. M'Kechnie.—Look at question 3750, "I think you removed a portion of the lung of the bullock or of the cow?—The pleura of the bullock. For microscopic examination?—Yes."

Mr. Ure.—Dr. Imlach states, certainly, that it was removed for microscopic examination.

Sheriff Berry.—Then it is hardly correct to say that they did not examine microscopically?

Mr. Ure.—No, not all of them. I rather meant to say, or I must have been misapprehended in what I said, that they did not discover the characteristic signs on the portion that they examined.

Mr. M'Kechnie.—I understood that, but you did not make it quite clear.

Mr. Ure.—He is asked, "What did you look for when you put it under the microscope?—For bacilli. Why did you look for bacilli?—Well, because there was a dispute; the animal had been seized," and so on. Your Lordship will have to keep in view that this examination was made some days after the examination by the majority of the witnesses for the prosecution, although that observation must be taken with this qualification that Dr. Wallace examined the animals on the 16th or 17th of May.

Sheriff Berry.—On the 17th.

Mr. Ure.—Yes, and on that occasion he removed a portion of the lungs, which was submitted to microscopic examination and showed the characteristic signs. I have not given your Lordship a reference, but I may do so now, to the witnesses for the prosecution.

Sheriff Berry.—You were to mention another witness who spoke to seeing signs of congestion. I think you said there were three. I presume Dr. Hime was the other one to whom you referred.

Mr. Ure.—Dr. Hill saw patches of congestion on the right and the left costal pleura of the bullock, p. 283, question 4644; he saw the thickening which they attributed to congestion; and then your Lordship will find, at the beginning of the evidence for the respondents, the servants of the owner of the bullock were examined and deposed that they had noticed there was something wrong with the carcase, and had in consequence called the attention of the authorities to the fact. Hugh Couper, the owner of the bullock, does depone that there was something wrong with it. Now, the references to the evidence for the prosecution with regard to the signs of tuberculosis in the bullock are these—Mr. Fyfe, the sanitary inspector, p. 3, questions 28 to 52; Beresford, p. 15, questions 309 to 315; Dr. Russell, p. 22, question 444, p. 23, question 461; Dr. Littlejohn, p. 55, questions 944 to 957, p. 64, question 1125; Mr. Robinson, p. 74, questions 1281 to 1302, p. 94, questions 1658 and 1659; Mr. McGeoch, p. 103, question 1790, p. 104, question 1814; Mr. Maylard, p. 113, questions 1983 to 1990;

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 Mr. Ure. Dr. Coats, p. 119, questions 2104 to 2120; Professor Limont, p. 132, question 2328; Dr. Wallace, p. 142, question 2496; Professor M'Fadyean, p. 154, question 2720, p. 164, question 2838, p. 166, questions 2866 to 2869; Professor M'Call, p. 173, question 2960. Your Lordship will therefore see that there are no fewer than twelve witnesses, I think, for the prosecution who, having examined this bullock, depone that they saw upon its carcase signs of acute tubercular pleuritis—that is to say, inflammation of the pleura attributable to the disease tuberculosis. If, therefore, the facts be established that the two animals when slaughtered were suffering from tuberculosis, and that the signs of the disease were manifest upon the lungs, upon the walls of the chest and in the glands, the prepectoral and inguinal glands of the cow, and the prepectoral glands of the bullock, the question is whether or no carcases in that condition were or were not fit for the food of man?

Sheriff Berry.—I quite understand that. In some of these references there are references to indications in the prepectoral glands, although you have not distinguished them as you did in the meat. You have not distinguished between those signs which were seen either by the naked eye or by touch, and those which were seen simply on microscopic examination, and particularly with regard to the symptoms in the prepectoral gland.

Mr. Ure.—Quite so. I thought I had mentioned that the signs in the prepectoral gland were discovered only, and could be discovered only upon microscopical examination.

Sheriff Berry.—Yes; but I meant you did not mention by whom. I suppose it is Mr. M'Geoch and Dr. Limont?

Mr. Ure.—Yes; M'Geoch and Limont were the two men who examined the prepectoral gland and found these signs. Now, that is the consideration of fact for your Lordship; and now the second consideration is one of scientific inference from the fact. Given those signs of tuberculosis upon the carcases, were they or were they not fit for the food of man? Now, that question depends for its solution upon certain scientific propositions. I think there are five propositions that I should table for the prosecution, and with reference to three of them I need cite no authority unless they are questioned on the other side. With reference to the latter two, I shall be under the necessity of referring to some evidence. The first, I think, has not been questioned, that the disease called tuberculosis, whatever form it may assume, whether phthisis, or scrofula, or struma, is a wide-spread disease amongst animals and man, and that to it may be attributed about one-half the deaths in the community, and a very large proportion of the ill-health.

Mr. Jameson.—No; 17 per cent. of the deaths.

Mr. Ure.—I think it is 40 or 50. The second proposition is that the disease known as tuberculosis now is identical in man and in the lower animals. There may be morphological differences, differences of shape, but in its essence the disease is the same. The third proposition, which I think will be unquestioned, is that the disease is communicable from the lower animals to man by,

amongst other means, inhalation and ingestion. The fourth proposition is that the disease tuberculosis is due to the active presence of a specific organism known as the bacillus tuberculosis. That proposition may be questioned, and I shall therefore cite some evidence in support of it. The fifth proposition, and it is upon this that the main difference of opinion between the prosecution and the respondents arises, is that, given the signs of tuberculosis upon certain specific organs of an animal, you may and ought reasonably to infer that the virus of the disease is in other portions of the carcase of the animal, where there may be no outward and visible signs to indicate its presence. It is upon an affirmation of all five propositions that the twelve eminent gentlemen who were examined for the prosecution reached the conclusion that the carcasses of neither of these two animals was fit for the food of man, and that both carcasses ought therefore to be seized.

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Now, with regard to the fourth proposition, which is really vital to the success of the prosecution in this case, that tuberculosis is due to the active presence of a specific organism, the bacillus tuberculosis, there is no difference of opinion amongst the witnesses adduced for the prosecution. They are unanimous in believing that it is an ascertained scientific fact, beyond all question by men pretending to the rank of scientists at the present day, that the disease is so caused. That proposition is, as I have already said, essential to the success of the case for the prosecution; and I submit that if your Lordship thinks that that proposition is established as a fact, it will enable you to dispense altogether with about nine-tenths of the evidence led for the defence, for this reason, which I shall probably develop more afterwards, that if gentlemen are brought here to decide upon this question who don't believe in the origin of the disease being the bacillus tuberculosis, a specific organism, then they inevitably must say that unless the signs of the disease are openly manifest and visible upon the carcase of the animal, the carcase must pass, and that therefore whenever they find a carcase which does not exhibit openly and manifestly the signs of the disease, that carcase is perfectly fit for human food. Now, with regard to the truth of the proposition, I think I can best bring the scientific evidence under your Lordship's notice by calling attention to a single passage in a book which has been founded upon by both sides as authoritative upon this question, I mean what we have been calling in the course of this trial the selected essays of Koch. If your Lordship will advert to page 183 of that book, the last paragraph in the page, you will find a statement of the cause of this disease couched in the most precise and scientific language, and with reasoning. I shall read the passage, for it is short, and brings really into focus all that I have to maintain in this part of the case:—"In the experiments made with pure cultures, " therefore, tubercle bacilli only, freed from all contamination " with the original morbid products, can have been the cause " of tuberculosis. But that proves the truth of the proposition " that tuberculosis is an infective disease depending on the

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 Mr. Ure. "presence of tubercle bacilli. It may certainly be said, and indeed it has been said, that tubercle bacilli are one cause of the occurrence of tuberculosis, but that other things, *e.g.*, other micro-organisms, may also have the power of inducing tuberculosis. This statement is erroneous, because, as we have seen, in all cases of tuberculosis tubercle bacilli are present, and the manner of their appearing further proves that they stand to the disease in the position of the cause." Then in another book which has likewise been founded on as authoritative by my learned friends, Fleming's book, as we have been calling it, at page 89, your Lordship will find in a single sentence the whole truth upon this question expressed thus:—"From his researches, Koch concluded that the presence of bacilli in the tuberculous masses constitutes not only a concomitant fact in the tubercular process, but that it is the cause; and that we should see in the bacilli the cause of tuberculosis—a cause which had hitherto only been suspected, and which presents itself to us in the form of a vegetable parasite." Now, that view is accepted by two of the three gentlemen who were presented for the respondents as entitled to speak with authority upon scientific questions—I mean Dr. Imlach and Dr. Hime. Your Lordship will find in Dr. Imlach's evidence, at p. 219, question 3759, p. 220, question 3777, and Dr. Hime's evidence p. 262, question 4346, that both these gentlemen give in their unqualified adhesion to the doctrine that tuberculosis is due to the active presence of the specific organism, and that the specific organism is the cause and the only cause of the disease. Now, that carries us a very long way to the establishment of the fifth proposition. I do not, I may say here parenthetically, give your Lordship, unless it is desired, a reference to the passages in the evidence for the prosecution on this point.

Sheriff Berry.—My recollection is that they were unanimous.

Mr. Ure.—They were unanimous on the point, and therefore I do not trouble your Lordship with any references. Their evidence would have been valueless, I submit, in this case unless they had accepted the theory. Now, I submit that that carries us a very long way towards the fifth proposition, upon which I again claim the unqualified assent of the leading witnesses for the defence. That proposition is this, that if you find the outward and visible indications of this disease upon the organs of the body or upon the walls of the chest, or, in short, upon any portion of the carcase, you must reasonably infer that the virus of the disease is scattered elsewhere throughout the carcase, even although unseen. Your Lordship will see how that follows. If the theory of the origin of the disease is correct, then the bacillus tuberculosis must make its appearance first. We know that it is absolutely invisible, except with the very strongest microscope. We know that search may be made where the bacillus is undoubtedly present, and even the microscope may not detect it. We know that the spores of the bacillus, which are the prime germs from which the disease originates are not visible even to the microscope, and we know that thousands of

these may be present without there being any possibility of detecting them; but being certain then that the bacillus and its spores are present before any outward and visible sign of the disease makes itself manifest, the only question is whether they may be present throughout the body or whether they remain localised in the place where their ravages are seen. It is quite certain that the tubercles which are visible are the signs that the animal has been there and has been at work for some time, and it is likewise quite certain that the healthy tissues of the body fight against the virus, and that it is only where, to use euphemistic expression, the bacillus finds a congenial soil it settles down and begins its noxious work and makes its presence known by outward and visible indications. But then this is certain, that the bacillus finds its way into the human frame by inhalation and by ingestion. If it does so, then we have no reason whatever to reject the conclusion that it may be in any portion of the system, carried thither by the blood stream, carried thither by the lymph stream, carried thither by wandering cells, as we are told by Koch's book. In short, although it has no motion by itself, it may be carried in any one of these ways throughout the entire system, and probably is, because although it finds no soil in which it may rest in various parts of the body, its absence from these portions you may never be certain of. In short, although you cannot predicate its presence in any particular portion of the body, you may never assert that it is absent if there are visible signs that the bacillus has been in the body at all. Now, it is upon these grounds, and giving that scientific explanation of their view, that the twelve gentlemen of eminence who were adduced here for the prosecution came to the conclusion that, if there were the outward and visible signs manifest, then the whole carcase must be destroyed.

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It is necessary that on this part of the case I should enter into a little more detail, and give your Lordship the references to each witness, and to the passage in each witness's deposition where the theory is developed. I only propose to read passages in this part of the case from the evidence of four witnesses, but I will give your Lordship a reference to all. In the first place I take Dr. Russell, at p. 32, and as the Local Authority here are acting on the advice of Dr. Russell, it is proper that I should read one or two passages from his evidence showing the basis of their case. Page 32, he says—

“ 579. I should like you to tell us at this point why is it that “you think that the whole animal ought to be condemned, “although there are only visible local signs of disease?—Because “behind these visible local signs of disease there is a constitutional “infection.

“ 580. And what are the limits of it?—Of course, wherever the “blood circulates you may have this virus.

“ 581. Are you of opinion that the blood, from moment to “moment, may be carrying this virus through the whole vascular “system?—That is so.

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" 582. And that even although the naked eye cannot detect it?
"—It is quite impossible to determine by the naked eye what is
the condition of the flesh of an animal as to consumption unless
you have made up your mind as to the nature of the disease.

" 583. But when you get a systemic disease—that is, a disease,
I understand, that affects the system—then the whole structure
of the animal probably is injuriously affected?—That is so.

" 584. And capable of injuriously affecting the consumer?—
That is so; quite independent of its physical appearances to the
naked eye, in virtue of the probable presence of a subtle virus.

" 585. I suppose even a minute anatomical and even histo-
logical examination might not disclose it?—It is quite possible;
the spores are invisible."

Then at p. 33—

" 593. There was another point that was adverted to, I think,
in part of the evidence I read to you before the Commission—
Has recent observation shown that the marrow of the bones
may be infected at the very outset, or, at least, before any
distinct local manifestations exhibit themselves?—That is so.
Before there is any pleural affection, or anything visible at all
to the naked eye, it has been found that the marrow of the
bones has been infected and become the headquarters of the
bacillus.

" 594. What does that suggest to you?—It shows the deep-
seated, penetrating character of this virus, so that, when you
are sure that it is present in an animal, you cannot certify that
it is not actively present in any part of it.

" 595. Could you certify that without a careful dissection of
the whole thing?—By a careful dissection of the carcase we
might probably ascertain all that was visible to the naked eye.

" 596. But you could not, without that, ascertain even what
was visible to the naked eye, and apparently there might be
communicable mischief which would not be visible in any part
of it to the naked eye?—That is quite certain, in my opinion."

Then, again, at the foot of p. 39, he is asked in cross-examination—

" 682. Is not that probable, that where you have simply organs
like the lung of an animal to all appearance healthy, it is pro-
bable that the lung is the only place where there is the bacillus
of tuberculosis?—In my opinion, it is highly improbable, and I
would almost say it is quite certain that the bacillus is flying
round the organism, ready to deposit itself and begin its course
of life wherever it may get the chance, although it has only, so
far as my observation can tell, up to the moment of observation
established itself in the lung.

" 683. Where was it flying in—in the blood?—Yes."

One more passage; at p. 45, he says—

" 784. Where it does occur in animals the flesh of the animal
would be good flesh to eat?—I cannot admit that, because of
the fact that this local manifestation is only an indication of a
process that is going on all over the body—a risk or a chance
to which the body has been exposed.

“785. But we are taking the case both of animals and man, where it has not become generalised, and it has become local.—
 “One must have precision of terms, and I don’t know any terms that have been more difficult to define than local and general. They have been discussed again and again, and people cannot agree about them at all. It does not follow that because the only appearance is local, it is only there where you have the virus.”
 Now, here I think Dr. Russell demonstrates the fallacy which lies in the evidence of the two leading gentlemen for the defence. Your Lordship will find that the distinction which is taken on the other side is this, that where you have the outward and visible signs of the disease confined to certain organs, the disease is, in their opinion, local, simply because the outward and visible signs are local, not because the virus may not be extending all through the frame. The witnesses for the prosecution say that that is unsound, and that the mere fact that you find the outward and visible signs localised does not in the least render necessary the inference that the disease is localised, for the disease may be generalised although the outward and visible signs are localised. Then the last passage in Dr. Russell’s evidence to which I ask your attention is on p. 51, question 885. I do not read that passage, but call attention to it, because there Dr. Russell is referred to passages in Koch’s book at p. 194. The passages are quoted where he refers to the way in which the bacillus is carried through the organism by means of the blood stream, the lymph stream, and the wandering cells, and Dr. Russell assents to the view which is there set forth of that eminent writer. Now, the same view, and proceeding upon the same scientific theory, is spoken to by the next gentleman to whom I am to refer, and I ask particular attention to this. Mr. Maylard, at p. 113, says—

“1995. What does the presence of a tubercle indicate?—That the animal is affected with tuberculosis.

“1996. What produces the tubercle?—The bacillus.

“1997. And do the bacilli find their way all about in the case of the animal?—Yes.

“1998. They are not confined to the tubercles?—No.

“1999. Can you tell how they circulate in the animal?—Through the blood.

“2000. Do they get into the lymphatic glands?—Yes.

“2001. And may they be there without any visible indication of their presence, even with the microscope?—Quite.”

Now, it is important to notice that the lymphatic glands play a very important part in this theory, and your Lordship will note what they are in Dr. Russell’s evidence at p. 30:—

“556. Tell his Lordship what the lymphatics are.—They are a system of vessels with associated glands, very, very minute.

“557. They are absorbents?—They act as absorbents.

“558. And they are all over the body?—They are all over the body.”

To revert to Mr. Maylard’s evidence, p. 115, your Lordship will find two questions on this part of the case:—

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"2020. Then, you think that a carcase that was affected with tuberculosis, such as the ox was, should not be allowed to go into the market as the subject of human food?—I feel it should most certainly not.

"2021. Why?—For the reason I have already stated, that one cannot tell that bacilli may not be circulating through the tissues, which may be perfectly healthy."

I refer next to the evidence of perhaps the most skilled man upon this branch of the case who was examined, I mean Dr. Coats. At page 121, question 2131, he expresses the opinion that both carcases were unfit for human food, and then he is asked—

"2134. What is the footing upon which you go?—I go on the footing, for one thing, that the bacillus is the agent of disease, not only in bovine tuberculosis but in man, and that in an animal that is tubercular the distribution of the bacillus is very difficult to determine, and quite beyond the possibility of thorough detection."

Then on the following page, 122, question 2146, he is asked whether the risk is obviated by merely removing, as is proposed, the organs which are visibly affected, and he answers "I don't think so." Then he is asked for his reason:—

"2147. Will you kindly favour me with the grounds of that opinion?—Well, for one thing, tuberculosis occurring in the pleura must be caused by bacilli carried by the blood to the pleura, and if carried by the blood to the pleura you cannot tell where they are carried or where they are not carried. They are carried throughout the body.

"2148. Not to interrupt you, may I take it that the bacillus must have been for some time in the body somewhere before the tubercles appear?—It must undoubtedly precede the visible appearance—the visible appearance being the effect of its working, and probably of its working for some time.

"2149. So that the bacillus is always concealed in a visible lesion?—Undoubtedly.

"2150. And in parts where there is no apparent harm going on?—Yes, necessarily so.

"2151. And no human being can tell where he may be?—No one can tell where he goes to, at anyrate.

"2152. Does the bacillus, so far as we know his habits, readily pass to the lymphatic glands?—It is a regular process that he passes to the lymphatic glands.

"2153. The lymphatic glands are for the most part surrounded by fat?—Yes, many of them are, and many of them are stowed away in odd corners of the body.

"2154. And the bacillus is liable to escape observation?—Undoubtedly.

"2155. And the lymphatic glands are numerous?—Yes.

"2156. It would be a difficult matter, would it not, to have them entirely removed from the carcase?—A very difficult matter; it would imply dissecting the whole carcase."

I ask attention to the evidence of other two witnesses only on

this point, and then I shall give your Lordship a reference to the rest. Professor M'Fadyean, who certainly may claim to be a very high authority on this question, gives his view upon page 153, question 2708. He says there would be a risk if the carcase went into the market where the organs or any portion of the organs were visibly affected with the disease; and he is asked at the foot of page 153,

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" 2709. Why?—Because, although tuberculosis may be, indeed, always strictly local to commence with, there is the tendency, or there is the danger at anyrate, of it becoming general, if the bacilli burst into the blood stream, and we can never declare with absolute certainty that in any particular carcase that has not occurred, because if the bacilli have gained access to the blood stream and have settled in different organs it takes some time—a week or ten days probably—to determine the formation of the tubercles.

" 2710. The bacilli must be present before the tubercle is formed?—Yes.

" 2711. Do the bacilli settle in what we may call a congenial soil as they pass through the blood stream and through the system?—They probably become arrested in every part of the body, but they propagate themselves in particular localities which are, speaking figuratively, congenial soil.

" 2712. Would you translate the phrase 'congenial soil' into more scientific language?—As a matter of fact, it is not so much a matter of soil—that is to say, of the bacillus finding or not finding a suitable material to nourish it—as that wherever the bacillus becomes arrested there is in the healthy body a struggle between it and the animal cells of the part. In particular cases the struggle seems more favourable to the cells; in others, the bacillus propagates itself, and leads to the development of the tubercular lesion."

And then at page 159, in cross-examination, he is asked—

" 2787. And therefore there is a very remote chance of bacilli or spores of bacilli of tuberculosis being found in what is usually used for roasts of beef?—There is simply the risk, which I mentioned before, that in local tuberculosis there is always a danger of the bacilli being thrown into the blood stream, and then they would be distributed throughout the muscular system, although you might not have naked-eye or even microscopic evidence of it.

" 2788. Is not the risk an infinitesimal one?—I should scarcely say infinitesimal, but I think it is not a great risk."

That brings out what I think your Lordship will find is the only discrepancy, if it can be called one, amongst the witnesses for the prosecution. Some of them say the risk is certainly great, while others are doubtful if it is a great risk; but they are all of them agreed that there is a risk, and that, consequently, in the interest of the public health, the carcasses should be condemned; in short, all are agreed that the economic considerations won't stand in the balance against the considerations of the public health, even although they may not agree as to the

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Mr. Ure. extent of the risk in any particular instance. Now, the last witness whose evidence I shall ask particular attention to is Professor M'Call. At page 175, question 2979, he expresses the view that the whole carcase should be destroyed, even where the signs were only local. He is asked to explain why, and he says—

“2981. Tell us why?—Because it is dependent upon a “specific organism, which apparently has the power to circulate “through the whole body, and it may be in circulation and we “do not know it. As a rule, we are not aware of the presence “of specific organisms that have gained an entrance into the “body until sometimes weeks or months have elapsed, but still “they are there and at work: and although we may not be able “to see a tubercle in which we have got the bacillus present, it “does not follow that the bacillus is not in the body.”

Then he is asked—

“2982. And after the tubercle appears, and after the mischief “has been wrought for some time, and culminates in the appear- “ance of the tubercle, do you assume that the bacilli or their “products, the spore or whatever it may be, may be distributed “in other parts of the body which may appear unaffected?—Yes.

“2983. And that is the danger?—Yes.

“2984. The existence of tuberculosis shows that the organisms “have been there for some time before?—Undoubtedly.

“2985-6. And that they have had an opportunity of being “distributed by the lymph or blood stream into all parts of the “body?—Yes.”

So that your Lordship sees that the scientific theory upon which these gentlemen proceed, in expressing the opinion that the carcases should be destroyed, is one and the same—namely, the risk that the bacilli, which must necessarily be there before their ravages are visible, may be carried into all parts of the carcase, and are probably present in all parts of the carcase, although, not having found a congenial soil, or not having had time to work their ravages, the outward and invisible signs may not exist. I ask your Lordship to take a note of the passages in the depositions of the other witnesses, which I do not read, where the same theory is explained and adhesion given to it. Dr. Littlejohn, page 64, question 1132. Your Lordship may recollect that Dr. Littlejohn is a recent but a confirmed convert to this view, and a gentleman of very great eminence in his own branch of the profession. Mr. Robinson, page 71, question 1220, and page 90, question 1603. Mr. Robinson, your Lordship will recollect, has been in exactly the opposite position to Dr. Littlejohn, because he is one of the oldest converts, although not a man advanced in years by any means.

Sheriff Berry.—He is in advance of the age.

Mr. Ure.—Yes; he early adopted that view, which I submit is held by all scientific men whose opinions are entitled to respect. Then, Professor Limont, page 132, question 2338. Your Lordship may recollect that he is a veterinary histologist and physiologist, and professor in these branchess in the Veterinary College in

Glasgow. Dr. Wallace, page 143, questions 2509 to 2511. He, your Lordship may recollect, is the medical officer of health for Greenock, and has been there for many years. I have already read the passages from Professor M'Fadyean and Professor M'Call in which they explain the same view; so that, to sum up this part of the case, I think your Lordship will find that there have been examined on the part of the prosecution three medical officers of health of great experience, two inspectors of local authority of great experience, Mr. Robinson and Mr. M'Geoch, and four veterinary pathologists of experience, Professor M'Fadyean, Professor M'Call, Professor Limont, and Professor Walley, and two specialists in histology and pathology, I mean Dr. Coats and Dr. Maylard, who express their unanimous opinion, based on precisely the same scientific views, that both these carcases ought to be condemned in respect of the signs of the disease that were visible upon them, and the scientific inference which they draw from these signs, that the disease pervaded the whole system. Your Lordship is entitled, in addition to that, to have in view scientific opinion from the outside, in so far as it has been rightly imported into this case, for I presume that the evidence which was led as to the results arrived at by the Departmental Committee of the Privy Council and by the congress of eminent gentlemen in this branch of science who met at Paris a few months after the report of the Committee was issued, is entitled to weight, and to considerable weight, in arriving at a decision upon the subject. Your Lordship will recollect that in the report of the Departmental Committee of the Privy Council, paragraph 46, there is expressed, in a single sentence, the view which the Local Authority here present in both cases. I may say that all the paragraphs to which we attach importance are to be found printed in the evidence, and your Lordship will find them probably most conveniently collected at pages 76 and 77 of the print. They were read so often in the course of the proof that I don't purpose now to trouble your Lordship by reading them; but you will recollect that the result arrived at by the Departmental Committee of the Privy Council was that the disease of tuberculosis was the same in man and the lower animals; that it was communicable from the lower animals to man by the four means set forth in paragraph 21 of the report, viz., inhalation, ingestion, inoculation, and heredity; and as the conclusion arrived at after consideration of the evidence submitted to the committee of the Privy Council, set forth in paragraph 46, that "although the bacilli may be found but rarely in the flesh, still the chance of their being present, either there or in the blood, is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals." That view, so concisely and pointedly expressed, has the unqualified assent and adhesion of all the gentlemen who were examined for the prosecution here. Now, it is important to keep in view that the committee of the Privy Council contained two gentlemen, at all events, of admitted eminence in this branch of the profession, I mean

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Dr. Brown and Victor Horsley—men whose opinions, apart altogether from the investigation which they made into the cause of the disease and the scientific inferences to be drawn from the cause, would be entitled to respect, and they give in their unqualified adhesion to the report of the committee—I mean, there is no dissent on the part of these two gentlemen. Then, that was followed within a very few weeks by the vote come to by the congress in Paris at the end of the month, in July, 1888—a congress which, however much it may be be-littled by the eminent gentleman examined on the other side, Dr. Hime, who appeared to think that in him was to be found concentrated all the wisdom upon this subject—a congress which, however much be-littled by him, certainly contained the names of many men of very great eminence in this branch of science. Three hundred of them, we are told, voted in favour of the resolution that the whole carcase of a tuberculous animal ought to be condemned, and that resolution became the finding of the congress, there being only three dissenting voices. Your Lordship will find that resolution printed at p. 32 of the print of evidence—"Every possible means should be adopted, comprising compensation to parties interested, for the general application of the principle of seizure and general destruction in totality of all flesh belonging to tuberculous animals, no matter how slight the specific lesions found in such animals." After discussion, and after the reading of papers specially dedicated to the subject, the fact that that resolution was come to by a body so numerous and so learned is, I think, entitled to very considerable weight. The French Government certainly thought so, because the resolution was followed by the decree which has been so often brought under your Lordship's notice in the course of this trial, the decree of July, 1888, which is to be found printed likewise on p. 32 of the print of evidence, under the second head of which both carcasses now under consideration would certainly have been condemned. That decree is given in question 576, and you will find that part of it provides that, "if the lesions, although localised, have invaded the greater part of an organ or are manifested by an eruption on the walls of the chest or of the abdominal cavity," the carcase is to be destroyed. Now, your Lordship will recollect that, if the witnesses for the prosecution here are to be believed, the eruption was manifest in the case of both carcasses, on the walls of the chest, and it being specially put to many of the witnesses for the prosecution whether animals exhibiting the signs which they saw would or would not have passed in France, they gave it as their opinion that both of these animals would have been condemned. I ask your Lordship's attention to only one passage, where your Lordship asked the question at Professor M'Fadyean, p. 168:—

"2894. I just want to be quite clear in what way it is you consider that this would have fallen under the French decree?—The French decree provides that wherever the tubercular process affects the lining membrane of the chest or

“abdomen, the entire carcase shall be condemned, and in this case it extended to the chest, at any rate.”

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“2895. In what way did it extend to the chest?—The tubercular process extended to the lining membrane lining the diaphragm. The chest cavity is bounded in a backward direction by a sort of partition which is called the diaphragm. The pleura is what lines the whole of the chest, including the diaphragm, and when the diaphragm is affected usually other parts of the pleura are affected.”

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So that in his opinion, and the opinion of the other gentlemen, these carcases would both have been condemned under the French decree. I attach special importance to that in this case, because we have on the other side a most valuable admission on this branch of the case. Dr. Hime, who proves my learned friend's case if any man proves it for him, gives in his unqualified adhesion to the French decree. Your Lordship will find that at p. 265 of his evidence:—

“4404. Now, if the description that I read to you from the evidence of the four gentlemen whom I have quoted, Mr. Robinson, Mr. M'Geoch, Dr. Wallace, and Dr. Littlejohn, of the condition of that bullock is correct, I don't think it would have passed under the French decree?—I don't remember the terms of it exactly, but, practically speaking, I believe it would not, according to that terrific statement that was read.”

“4405. It would not have passed?—Oh, no.

“4406. Are you of opinion that that decree is uselessly strict, or do you think it is proper?—I have always acted on that, and I wish for nothing more.”

“4407. You think that the terms of that decree are very fair?—Yes.”

So that if your Lordship finds on the evidence of the witnesses for the prosecution that they saw upon the carcases the signs of disease which I have detailed, then I claim Dr. Hime as a witness in my favour, because he too would have condemned the carcases which the witnesses for the prosecution think ought to have been condemned. With regard to outside authority upon this question, I ask your Lordship's attention now to the practice in other towns, neighbouring towns, smaller, no doubt, and less important in some views than Glasgow, but still a practice that ought not to be left out of mind in considering the question,—I mean in Edinburgh, in Greenock, and in Paisley. In all these three places, for some years past, it has been the invariable practice to condemn every carcase which exhibited, even locally and to a limited degree, outward and visible signs of tuberculosis. Your Lordship will find the evidence with regard to the practice in Edinburgh—

Sheriff Berry.—There is no doubt about that.

Mr Ure.—Then I do not ask your Lordship to take a note of the evidence on this point. It is, I think, quite undisputed; and in addition to that, we have had imported by reference the views of at least three eminent gentlemen whose views entirely coincide with those we present, viz., Dr. Fleming, Koch, and M. Bouley, an

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eminent pathologist now dead, who all express their unqualified opinion to the same effect. They are all referred to in Dr. Fleming's book. Now, upon that evidence, I ask your Lordship for a finding in favour of the Local Authority here.

Turn now for a moment to the evidence which is presented for the defence. I can dispose of it, I think, within a very short space. There were twelve gentlemen examined for the defence. Four of these were ordinary veterinary surgeons, four were medical officers of health, and the remaining four were gentlemen with more or less claim to special knowledge on this branch of the subject. Now, if the view that I have presented for the prosecution is a sound view, and if the germ theory, as I may call it, is correct, then it is vain to adduce in support of the case for the respondents the evidence of any man who at this time of day rejects the germ theory. It would just be as reasonable to ask your Lordship, if you were investigating a question of physical science, to take the opinion of a man who denied the law of gravitation, or, if investigating a question of navigation, to take the evidence of a man who denied the rotundity of the earth. They are entirely valueless in considering the question before the Court, because, as I have said, if a man believes that the virus of the disease is to be found in the outward and visible indications of the disease, that man must inevitably say that, if you excise the portions which exhibit the outward and visible signs, the remaining portion of the carcase may safely pass into the market. But, on the other hand, if the germ theory, as I have submitted, be the true theory, then the evidence of gentlemen who either reject it altogether or who have not made up their minds on the subject, or who have never heard of it, is entirely valueless. Now, I have divided the evidence for the defence into three classes. In the first place, there are four veterinary surgeons, and your Lordship will find that three of them—Pottie, Allan, and Boyle—offer no opinion whatever upon the question of the origin of this disease. Whether they entertain an opinion or whether they do not, whether they ever heard of the germ theory of the origin of the disease or whether they have not, remains involved in mystery. There is, however, one notable exception in this class—I mean Mr. Anderson. Your Lordship will recollect that, in the course of the evidence for the prosecution, we had from time to time pushed out and then withdrawn theories about sepsin, about alkaloids, about ptomaines, about lymphadenoma—

Sheriff Berry.—I think the lymphadenoma came from you.

Mr. Ure.—It may be so, and probably we were anticipating one of the theories that were likely to be adduced against us, but all these disappeared when we came actually to hear the evidence led upon the other side. It was left, however, for Mr. Anderson to advance a view which certainly has the merit of being thoroughly original, that the origin of this disease was due to some mystic and recondite essence which he called pabulum; and feeling, of course, that he was standing very much alone on this question, he, with a natural desire for support, claimed both the

support and the fellowship of none other than Koch, the great discoverer of the bacillus, and undertook, your Lordship will recollect, to produce a passage from Koch which supported his view. The passage from Koch was duly produced on Monday morning, which indicated, I think, that Mr. Anderson must have misspent his Sunday badly. I recommend that passage, which is printed at length on page 313, to the notice of my learned friends, and if they discover in it any passage or sentence or syllable to suggest that Koch agreed with Mr. Anderson about the origin of this disease, then I think their powers of discovery will be much greater than that of any investigator who has appeared in this case. I pass from Mr. Anderson and his pabulum theory to the evidence of the four medical officers. The first was Dr. Goldie from Leeds. Your Lordship will recollect that he offered no opinion whatever upon the question. He frankly avowed that he did not tender himself as an authority upon bacteriology or upon the origin of the disease, but he informed us that he distrusted entirely the guidance of Koch and Klein. Before I pass from Dr. Goldie, I may, however, remark that I take great aid from him in establishing the case for the prosecution, because your Lordship will recollect that when the signs which were found by our witnesses upon the carcasses were detailed to him, he said that if he had found the same signs he would have condemned the animals. Now, the other three medical officers are Dr. Gibbon, who at page 281, question 4511, announces without hesitation his opinion that the germ theory is thorough nonsense; Dr. Hill, who at page 285, question 4686, announces that he "does not know"; that he "has not decided"; that he "neither accepts nor rejects"—these are his words; and Dr. Mason, the medical officer from Hull, who offers no opinion at all on the subject. That leaves the last class, which likewise contains four individuals. In the first place there is Dr. Dougall, who at page 302, questions 4963, 4964, avows himself a thorough agnostic, although from his answer to question 4963, I should have thought his attitude towards this question was more that of a Brahmin; because according to the teachings of the moral philosophy class the attitude of the Brahmin towards the moral order of the universe, is expressed in the phrase that "whatever is is right, whatever is is wrong"; and Dr. Dougall, in question 4963, says that he neither accepts nor denies, but believes that both theories are right and both theories are wrong. Dr. Young, at page 318, question 5256, expresses decided unbelief in the theory, and accordingly your Lordship will recollect that he, in advising the sanitary authorities here, recommended that both carcasses should be passed, and did so with perfect scientific and logical consistency, holding the views which he did.

Sheriff Berry.—He inspected them along with the other gentlemen for the local authority.

Mr. Ure.—He did.

Sheriff Berry.—And he disagreed with them as to their conclusions,

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Mr. Ure.—Yes, he necessarily disagreed with them inasmuch as he was an unbeliever in the germ theory. Now, that leaves other two gentlemen only, Dr. Imlach and Dr. Hime; and as I have already mentioned to your Lordship, both these gentlemen who, undoubtedly, claim to be the most eminent scientists examined for the respondents, gave their unqualified assent to the theory. Dr. Imlach's view is this, that if the carcase exhibits signs of disease locally, and if, in addition to that, he finds emaciation, then condemnation of the whole carcase must follow, and he rejects the view which is presented for the prosecution, because of the infrequency with which bacilli had been found in the blood, and the improbability, according to his view, of there being any bacilli there. He does not, your Lordship sees, directly counter the view of the witnesses for the prosecution; he differs from them I should say in degree only, but this degree of improbability is so high, of the bacilli being found in the blood stream and so disseminated through the system, that he would not condemn the carcase until he found emaciation, but when he finds emaciation, although, mark you, he finds no outward and visible indications of tubercular disease, then he condemns the whole carcase. Now, I ask your Lordship whether that is a logical position to take up, a position which is scientifically unassailable. I venture to think it is a most vulnerable position to take up, because nobody yet has heard of emaciation of a carcase inducing any disease or causing any injury to anybody; and yet if he finds emaciation, that is to say if he finds what he regards as an indication that the virus has spread to the system, even in its earliest stages, causing emaciation of the animal, then he condemns the carcase, and condemns it without knowing any more than he would know if he simply had the outward and locally visible signs of tubercular disease, without knowing any more than if he found those indications that the bacilli were actually present in the remaining portions of the system, because nobody has said—and he does not say it himself—that emaciation is due to the presence of the bacillus in that particular portion of the body which exhibits this deterioration.

Sheriff Berry.—He assumes it as an indication of the spread of the disease.

Mr. Ure.—He does; but then observe he does not say, and nobody can say, that the bacillus itself and its spores produce emaciation in the first instance. It produces, we know, these tubercles and giant cells and the rest, but nobody has said that it produces emaciation; he does not say so either, and therefore he would condemn the whole carcase, although he has no more certain sign than we have that the bacillus has found its way into the rest of the system. I don't quote any more from the passage in which he explains his view, but your Lordship will find on page 211 the statements upon which he bases his theory. I would ask your Lordship's attention now to Dr. Hime's evidence. He too admits the germ theory; he too admits the possibility of communicating the disease by means of ingestion; and he too admits that milk containing the bacilli would be

dangerous to human life; but then he draws the line at the ingestion of flesh. His view upon that matter is shortly this,—he agrees with Dr. Imlach in thinking that the probability of the bacilli finding their way into the blood stream is so high that you ought not to condemn the carcase without having certainty, or, at all events, a higher degree of certainty than he thinks there is, of the bacilli having found their way beyond the local and visible signs; but further, he says—and this is a separate part of the case,—that inasmuch as no experiments have demonstrated that the eating of flesh of a tubercular animal has resulted in injury to a human being, therefore you ought not to condemn the animal *in toto*. His theory your Lordship will find developed on page 243, questions 4011 to 4013, and on pages 269 to 272. In his cross-examination upon these three pages, your Lordship will find detailed at full length the views upon which this gentleman proceeds in condemning only where he finds, as he says, that the disease has been generalised. Now, the whole fallacy of the case presented by him and by Dr. Imlach, because really these are the only two witnesses who are worthy of attention in the matter, the whole fallacy lies in the answer which he gives at page 243, question 4111 and 4112, where he draws what I venture to submit is scientifically an unsound distinction between localised and generalised disease. He says—

“4111. In the great majority of cases, is the disease localised for a greater or shorter length of time?—Yes.

“4112. And while so localised do you think it would be right to say that the whole carcase is diseased and unfit for human food?—I think it is most irrational to say so, because if it is localised it cannot be general, and if it is general, then it is a mistake to say that it is localised. The one excludes the other.” Now, of course, the fallacy under which that answer labours, and which is really at the root of the whole case, is perfectly obvious. When he distinguishes between localised and generalised, he is there speaking of outward and visible signs, and he says if the outward and visible signs are localised, how can you talk about the disease being generalised. If they are generalised, if you can see them all over the body, then, of course, localisation cannot be predicated of it. Now, my answer to that is that it is an entire scientific fallacy to suppose that the disease is localised because the tubercles are localised, because you may have by far the most dangerous and insidious part of the disease where no outward and visible signs are there to indicate its presence, and the result which he reaches—because ultimately he is driven to admit that the bacilli and spores of the bacilli may find their way, and do invariably find their way into the blood stream—the result which he is driven to as the result of these assumptions is at the foot of page 271.

“4473. It comes to be a question of degree, however?—Quite so; both in Britain and France, and everywhere.”

“4474. And therefore a question of opinion?—A question of opinion, of course.”

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So that your Lordship has Dr. Hime admitting that according to his theory it is merely a question of degree, and that the difference between the two authorities is just one of opinion, and I ask your Lordship whether the scales do not come down at once in favour of the local authority if this be a matter, as I submit, of scientific opinion, and of scientific opinion based upon sound scientific theory.

There are only two minor questions which remain for me to bring under your Lordship's notice. The first is whether in point of fact the disease may be transmitted from the lower animals to man by ingestion. Now, I agree that there was some difference of opinion expressed in the course of the evidence upon the point; but I submit that the weight of opinion is entirely in favour of the view that the disease may be communicated by ingestion. In the first place, you have it in the evidence of all the witnesses, I may say, for the prosecution; you have it expressed as the finding of the Departmental Committee of the Privy Council; and you have it admitted by Dr. Imlach and by Dr. Hime, who as scientists could hardly fail to give their assent to the view. Dr. Imlach, I find, admits it on page 211, questions 3604 to 3606, and on page 225, questions 3826 to 3831. Dr. Hime admits it, among other places, in the passage where he agrees that the disease may be communicated by the swallowing of milk containing bacilli, and his only answer when it is put to him why may it not be communicated equally by the swallowing of flesh containing bacilli is, "I don't know any case of it"; but that answer, your Lordship sees, proves a good deal too much, and that is the fatal objection to it, because, if the answer be a good one, then it cuts the feet from every one of the witnesses who gave evidence on the part of the defence, for every one of them, your Lordship knows, agrees that the whole carcase must be destroyed if they were assured that the tuberculosis had spread through it and had become generalised,—of course that means that the disease would be communicable to man by ingestion.

Sheriff Berry.—That there is danger.

Mr. Ure.—Quite so; that there is danger, and that the danger is not less—I mean the admission of the possibility of communication by ingestion is at once given whenever you have them all agreed that the ingestion of tuberculous food would be a danger, and they they would consider, in the interests of the public health, that it should be excluded from the market. Now, the other point is that cooking effectually destroys the germs, and that hence if meat after being put into the market is properly cooked it is entirely innocuous. Now, in the first place, I have the same answer to give to that as I gave to the other point, that ingestion won't do it; that these gentlemen are all prepared to condemn tuberculous meat if the tubercles are sufficiently widely spread, and they don't think that cooking would destroy sufficiently the germs which the meat contains, or destroy them to such an extent and effect that it would be safe to put the meat upon the market. In short, the whole question is admitted in our favour in the

ground which the witnesses for the defence have taken up. But was it not brought out clearly in the course of the evidence, both for the prosecution and for the defence, that cooking could never be relied upon as a sufficient preventive—the ordinary cooking of roasts of beef and beef steaks, and other portions of the animal, was not sufficient to destroy the bacilli, and was in no sense sufficient to destroy the spores of the bacilli, which do not become devitalised at the same temperature as that at which the matured bacillus itself becomes devitalised. They require a much higher temperature. In short, the evidence upon this point came to this, that a temperature of 107° for several weeks might destroy the bacillus; that a temperature of 212° for some minutes, or some say for an hour, might destroy the bacillus, but that they could not predicate any temperature or any length of time of exposure to a high temperature that would be sufficient to destroy the spores of the bacillus; and everybody is agreed that the ordinary cooking of ordinary joints of beef and other portions of the animal is not sufficient to raise it even to the temperature at which blood coagulates, and therefore is not sufficient to kill the bacillus or its spores. I do not refer to evidence in support of that view from the witnesses for the prosecution, because the witnesses there were unanimous, but your Lordship will find very clear and unqualified assent given to that view by Dr. Imlach on p. 232, question 3928. The last objection which is taken by the witnesses for the defence is that no experiment has up till now demonstrated the noxiousness of tubercular food. Now, my answer to that is that there again the witnesses for the defence have chosen ground which won't avail them even to maintain their own theories, because not one of them has said that any actual experiment has demonstrated that the eating even of tuberculous food by a man has resulted in the communication of the disease to the man. There has been no experiment made which demonstrates even that, and therefore they must support the view which they themselves maintain, in the absence of experiment demonstrating it soundness. Again, I say that the argument is one which proves too much, and is open therefore to that fatal objection. But, then, is it not clear that this is a question which is not susceptible of absolute definite scientific ascertainment. You never can obtain all the conditions which are essential, and exclude all the disturbing elements which it is necessary to exclude in order to have an absolutely clear and an absolutely decisive experiment. The scientific view upon that question your Lordship will find admirably expressed in Koch's book, at the end of p. 198, and in Fleming's book at p. 79, and I may cite a further authority in support of it, an authority which, whatever may be said of it on this side of the bar, can certainly not be challenged from the other side, I mean the view expressed by Dr. Hime in his little book, which your Lordship will find quoted on page 258 of the print, in which he expresses, as I think, a very much wiser and more serious view than he was disposed to express in the witness-box here, when he says: "It is no justification for the general sale of

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Mr. Jameson. *Mr. Jameson.*—My Lord, I have arranged with my friend Mr. M'Kechie that I should reply to the prosecution chiefly upon the facts of the case. This is undoubtedly a question of great importance from one point of view. It is of great importance to butchers, farmers, and all interested in agriculture. It is of importance to the public from the same point of view, for if the principles contended for on the other side are carried out it will result in the destruction of so many carcasses that the price of butcher meat will be seriously raised upon the general public. In corroboration of that I would refer your Lordship to what Professor M'Call, one of the witnesses for the prosecution, says. At p. 180, in answer to question 3062, he says, "I would find a tubercle now and again present in the bodies of every animal that I made a dissection of"; and again, in answer to question 3076, he says, "If you take the little tubercle that you will find in the liver and sometimes in the lung and in the spleen, if you take all these as indicative of tuberculosis still existing, then there is scarcely such a thing as a perfectly sound animal." He has pointed out, before coming to this, that there are cases in which he has found where the tubercle has healed, and therefore has been cured. I shall come to that afterwards. Now, I say the question is of importance in that point of view; but with regard to the public health, I must be excused in saying that I think, upon the evidence, it is shown that this question is of almost insignificant importance, for this reason, that it has not been shown from first to last in this inquiry that the eating of the sound flesh of animals that have been subject to local tuberculosis has ever been productive of any injury whatever, not to the public health I shall say, but to the health of a single individual. Now, if this were such a danger as is represented, it can hardly be but that in some case tuberculosis in

some individual could have been traced to the use of tuberculous meat, as has been done, I believe, with regard to the use of tuberculous milk, which is a very different thing, as I shall afterwards point out. Therefore, I do think that, instead of making a mountain out of a mole-hill, there has been a mountain made out of a very much smaller article, namely, a tubercle. What we shall submit to your Lordship upon this whole case is that, in the first place, the flesh of the particular animals in question was sound wholesome flesh, fit for human consumption; and in the next place, that there was no such risk or danger to the public proved in the use of the flesh as to entitle a magistrate or a judge to condemn the flesh as, in the words of the statute, "unfit for the food of man." Now, in examining the evidence upon this question, I shall deal, so far as the soundness of the flesh is concerned, simply with the animal which I am immediately concerned with on behalf of my client—that is, the cow; Mr. M'Kechie will afterwards deal with the bullock. Now, as to the soundness of the flesh of the cow, I think something was said by Dr. Littlejohn in detraction of it, and by that forward young man, Mr. M'Geoch, who came here to contradict what he had said in the Paisley Sheriff Court, and only got out of it by attempting to make us believe that, while there were several questions down upon the shorthand writer's notes, dictated by the Sheriff, regarding tuberculous flesh, flesh had never formed the subject of question in that Court at all. I therefore put his evidence aside as of very little value indeed. With these exceptions, and keeping in mind that Dr. Littlejohn only saw the animal a long time after it had been killed, I say that the witnesses for the prosecution all say that the flesh was perfectly good. I may refer you to the evidence of Mr. Fyfe, p. 6, questions 102 to 106: also to the evidence of M'Lellan, the inspector, p. 10, and I lay very great stress upon the evidence of this gentleman, because he was accustomed to inspect meat constantly. I refer in his evidence to question 208, 209, and 210; then Beresford, p. 17, questions 350 to 353, and 356. The evidence of these witnesses comes to this, that the flesh of the cow was perfectly good. It was a little darker, some witnesses said, than the flesh of the bullock, a little darker than flesh usually is, but that was due to the cow being an older animal, and, as our witnesses frankly admitted, it was not what you would call prime meat. It was a cow that had been used as a milk cow, and was killed at a somewhat advanced stage of life, after it had been used in that way for many years, and of course it was not such juicy meat as that of a two-year-old bullock. But then, on the other hand, such meat may be very useful for human food; it may make excellent soup or anything of that kind; and it may be a matter of very great convenience to the poorer classes of the public, who, as Mr. M'Intyre explained, are glad to get meat at 6d. and 8d. per pound when they cannot pay 1s. 6d. a pound for it. Accordingly, I submit that it is proved by these witnesses for the prosecution, and by all our witnesses, whom I need not refer your Lordship to, because I shall assume in what I have got to say that your

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 Mr. Jameson. Lordship has got the evidence before you, and I need not go into detail about it,—but I submit that the evidence of the witnesses all goes to this, that the flesh of this cow was perfectly healthy, and not only that, but, what is of great importance to this inquiry, there was a lot of what they call interstitial fat—that is, fat in the interstices of the flesh,—showing perfectly well that there was nothing like emaciation, and that the flesh was firm. It also shows that the disease of tuberculosis, which undoubtedly existed in the cow—for I shall admit that—had not become generalised, because they said distinctly that when the disease has become generalised the flesh gets soft and watery, and pale in colour. Now, all these symptoms were absent from the flesh of the cow—in fact, the only fault found with it was that the flesh was darker in colour than usual. That is how the matter stands as to the flesh of the cow. We come now to the question as to what state of disease this cow was in; I am not going to deny that this cow was affected with tuberculosis; I think that is proved beyond a doubt.

Sheriff Berry.—There is no doubt about that.

Mr. Jameson.—But I will say this, that, in the first place, it was local tuberculosis, and in the second place, that it was tuberculosis in a quiescent, if not in an arrested condition. Dr. Russell was pleased to say that the deposit was in the softening stage; but on the other hand, he says in cross-examination, very fairly, that the nodules had got to the chalky cretaceous stage. He says that upon p. 46, questions 793, 794, and 795, although he won't admit that as general proposition of the whole disease, but he says in question 796, that it had received a check so as to allow the cretaceous deposit in that particular part of the animal. Now, this is very important, because it seems rather to be the case that, so far from the bacillus being active and spreading itself—if there was a bacillus—through the cow's system at this time, it was in a very bad way. The vital forces had so much got the better of it that they had begun to extend on both sides, so to speak, and to bury the bacillus in the house which it had made for itself by having this chalky deposit all round it; and we were told by the witnesses on both sides that they find these chalky nodules frequently in *post-mortems* of human subjects who must have had tuberculosis at one time, but who had become perfectly cured of it, the only thing remaining being the grave of the bacillus, if we may say so, in these little chalky deposits in the lungs. Therefore, so far from this disease being in a generalised condition in the cow, it was not only localised but I say it was arrested disease, and that is proved by a number of witnesses, who say that this deposit was symptomatic of the disease having been arrested. I have only one more remark to make upon the flesh of the animal, and that is this—it is a most extraordinary thing that in this inquiry, where we are concerned not as to whether the viscera of this cow should be thrown away, because I admit that—and I say that is the proper way to deal with it—throw away all the inside; but where the sides of beef are concerned, that not one of the wit-

nesses on the other side thought it worth his while or worth his trouble to examine microscopically the flesh of this cow or of the bullock, to see whether their theory was true in these particular cases, and whether bacilli could be discovered in the flesh or muscle of either of these animals. They make the excuse that they could not examine a whole side of beef. Nobody is asking them to do that, let them take samples, let them take places where they think these things are likeliest to be in the flesh, in the muscles, and let them examine them; let them take some place where they say the circulation stagnates a little, and let them examine these through the microscope; but they don't do that, and accordingly, so far as direct evidence in this case is concerned, I ask your Lordship to assume, from the want of evidence on the other side, that there was not a bacillus or a tubercule in any part of the sides of beef of those animals which your Lordship is asked to condemn, and there is no question here as to their viscera.

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Sheriff Berry.—There were certainly none seen.

Mr. Jameson.—There were none seen, there were none proved as matter of fact to have existed. Now, I say that was a matter capable of proof, and as it has not been proved it must be assumed against the prosecution.

Sheriff Berry.—You are speaking entirely, I understand, of the flesh; but of course you are keeping in view what was said about the glands.

Mr. Jameson.—I am just coming to that.

Sheriff Berry.—Quite so. I mean that you are not to suppose that I had assented to the proposition that there was no proof of the disease beyond the internal organs. I understand that you are speaking of them, and that you are referring simply to the flesh of the muscles.

Mr. Jameson.—I shall leave my learned friend Mr. M'Kechie to deal with the prepectoral gland of the bullock. There was nothing mentioned about the inguinal gland of either bullock or cow in the oral evidence, but I find it in this certificate, which was put in at the end of Mr. M'Geoch's examination. I confess I did not see it at the moment, but it is so indistinct and inaccurate that I don't think your Lordship can give any effect to it. What he says is this:—"I have found, in cutting into the carcasses of the bullock"—you will notice that he speaks of "the carcasses of the bullock"—"tubercular deposit undergoing decomposition in one of the prepectoral glands, and also tubercular pleuritis"—pleuritis without the "e"—"on the lining of the ribs and diaphragm"—diaphragm wrongly spelt too. This is the learned gentleman from Paisley who comes to instruct us in medical knowledge! "In cutting into the prepectoral and inguinal glands,"—he does not say of what—"and the lungs of the cow." He does not mean the prepectoral glands of the cow; he says, "In cutting into the prepectoral and inguinal glands, and the lungs of the cow."

Sheriff Berry.—I looked at that, and I read the words "of the cow" as covering the whole of that sentence.

June 17, 1889. *Mr. Jameson.*—Well; it was not the cow he examined the prepectoral gland of at all, it was the bullock.

Mr. Jameson. *Sheriff Berry.*—The first part is confined to the prepectoral gland of the bullock, but the last part applies to the lungs of the cow.

Mr. Jameson.—He does not say a word about that in his evidence. I shall refer your Lordship to the passage my learned friend quoted. It is question 1788.

Mr. Comrie Thomson.—He includes under the word “lymphatic glands” the inguinal gland.

Mr. Jameson.—He says in his evidence—

“1788. Did you examine the lungs and lymphatic glands of the cow?—I did.

“1789. And what did they exhibit?—Tubercular deposit.”

He does not say which of the glands, but it would be on the lymphatic gland immediately connected with the lungs. Then he is asked about the bullock, and there he says that he cut into the prepectoral gland. That is question 1797; but he never says he cut into or examined a prepectoral gland of the cow. He takes away the prepectoral gland and examines it microscopically, and he goes on to say what he found there. As to the inguinal gland, he never mentions that at all in his oral evidence.

Sheriff Berry.—Unless you include it under the head lymphatic glands.

Mr. Jameson.—I suppose that is so, but I submit that that is not evidence that can be accepted. Then the person who examined this along with him, Professor Limont, speaks about these matters, but he only speaks in question 2335 of the prepectoral gland. With regard to the cow, this same Professor Limont speaks to seeing nothing else in the cow but in its lungs. He saw bacilli and tubercles nowhere else.

Sheriff Berry.—That is entirely in the bullock.

Mr. Jameson.—I see this is the prepectoral gland he is speaking of, and it was the bullock’s prepectoral gland he took away. This shows the very loose way in which this certificate has been framed, both as to its spelling, its grammar, and, I submit, its fact; and as it is the only place where we find anything about the inguinal gland of either of these animals, I submit that it is not entitled to any weight. He does not speak up to that in any part of his oral evidence. I submit, therefore, that this ought not to be treated seriously as evidence against me; and I confess I am somewhat anxious about that, because if I had noticed this report at the time it was given in I would have cross-examined the witness upon it, because in his evidence he says there is no evidence of tuberculosis in the cow except in the lungs and surrounding membranes and glands, and there it was only some small part of the lung, the tenth or twelfth part of it, that was affected. That, I think, really shows that with regard to this cow the only place where there was tuberculosis was in the lung, and that there, as I have said, it was in a dormant or quiescent condition. Now, in that state of matters has such serious risk

to the public health and safety been proved as to entitle your Lordship to order the destruction of this otherwise—for I shall now assume it to be so—this otherwise wholesome and sound carcase. The only risk that is put forward by Dr. Russell and the other witnesses who agree with him is the risk of the bacillus tuberculosis having spread from the place where it has been localised into the other parts of the system. Dr. Russell says this at p. 30—

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“567. I suppose one need not put it higher than this, that there is so great a probability that the whole of a tubercular animal is affected that it is right that the public should have the benefit of the doubt by being protected?—That is my opinion, and it has evidently been the opinion of this departmental commission, and of the recent Veterinary Congress in Paris.” He further says at p. 32, in the passage read by my learned friend, that there is a certain risk. Dr. M’Fadyean says upon pp. 161-162 in cross-examination—

“2808. In your opinion it would be right not to condemn them?—I should hesitate to say that. You would not entirely get rid of the risk to which I referred, because you never can be perfectly sure that there has not been an irruption of the bacilli into the blood system.”

“2809. But is not that risk, taking the number of cows, really an infinitesimal risk?—No. I would hesitate to call it infinitesimal.”

“2810. It is a small risk, is it not?—I think it is not great. I think we have not sufficiently accurate data upon the point really to make one think so little of it where the public health is at stake.”

That is referring him to the cases mentioned on the other side, where a great number of animals partially affected with tuberculosis had been passed at Berlin, and that is the way I intend to take this case, because what the prosecution are contending for, I submit, is this, that wherever you have external evidence of local tuberculosis the whole carcase must be destroyed. They are not going to have any middle course such as is taken by the French decree, nor as is taken in the abattoirs at Berlin. The course they suggest is—and their evidence all points to this—that where you have the slightest local symptoms the carcase is to be wholly destroyed. Now, we submit that it cannot be said that there is a serious risk, or indeed a risk of any kind, proved to exist to the public in the use of the flesh of animals where the tuberculosis is only local. My learned friend Mr. Ure, in his very clear and distinct opening, said there was a fallacy underlying the whole argument on our side, and that was the distinction between local and general tuberculosis. I can only say that if that is a fallacy it is a fallacy which is put forth and founded on in the report of the committee, on the learning and skill of which we have heard so much on either side. In paragraphs 35, 36, and 37 of the report of that committee, your Lordship will see that the distinction is perfectly clearly drawn as the result of their labours. They say, “The disease, as already

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"referred to, may attack the body of an animal in two different ways. It may, for instance, be introduced into the blood, and be distributed generally over the body, spreading so rapidly as to make its entry difficult of discovery, and to gain for it under this condition the name of acute or general or miliary tuberculosis. On the other hand, it may, as already stated, affect for a considerable time only the point of entry and the neighbouring lymphatic glands, becoming subsequently distributed over the body from these latter. This is called in the first instance local tuberculosis." So there the distinction is perfectly clearly drawn, and I think your Lordship will see that in cross-examination we compel every one of the witnesses for the prosecution to admit that there is that very sound practical distinction between general and local tuberculosis. But don't the facts show that most conclusively. We were told that this bacillus was precisely the same as the bacillus of a scrofulous or strumous gland. Nothing can be more certain than that that is purely local and never spreads further. Again, we were met with this instance of infection, that butchers sometimes suffer from tuberculosis in the shape of what are known as butchers' warts. That is the statement of Dr. Russell, but he himself admits that in that case also the tuberculosis is purely local and remains so, and that he never knew a death occur from it. Then, what about that evidence we had as to *post mortems* in the human subject, where it was plain on a *post mortem* examination that particular parts of the lungs and other organs had been affected, and the disease had spread no further. There also the disease had been purely local. Now, if that is so—if we have these well recognised instances of the disease being purely local,—what reason have my learned friends for saying that in every case of local tuberculosis you are to assume that you have bacilli careering—that is the phrase which Dr. Russell uses in one passage of his evidence—careering round the system? The thing is pure imagination. It is not supported by anything but theory. No one ever saw him careering through the blood stream or the lymph stream either. He has seldom been found; there is not a case where he has been found in local tuberculosis in the blood stream. Of course, when tuberculosis becomes miliary or general, I suppose they have been found, and these are the cases that have been specially referred to. I am approaching this question at present, as your Lordship will see, entirely from the side of whether there is a risk with regard to the flesh of the diseased animal. I shall come afterwards to the other side—of the question as to whether there is a risk in eating the flesh of such an animal at all; but in the meantime what is the danger? It is said the danger is that the bacillus is distributed. Now, in the first place, I have shown that it is at all events possible, nay, certain, that in many cases it is never distributed, but remains where it is. If, as is suggested by my learned friend, the bacillus is always in a state of fission or breeding and throwing off spores, what must happen to these spores in all

these local cases is this, that the moment they are carried by the lymph stream or the blood stream into the general circulation, they are met there by these antagonistic blood corpuscles which destroy them, and they are destroyed merely by the oxygen of the blood, as many of these small organisms are. But that is the result we must come to, otherwise the animal would at once become afflicted with general tuberculosis. Now, that amounts to this, even assuming, as my learned friend contends for, that these bacilli must be for ever breeding and propagating themselves—that brings us up to this, that no animal that had tuberculosis could live unless there was something that stopped the bacilli from going any further—stopped them from going beyond the locality where they had at first fixed themselves. Now, what is it that has that effect? It is the white corpuscles of the blood, or it is simply the oxygen of the blood that takes effect upon these organisms when it is brought into chemical contact with them; and what is the result of that? The result is that the bacillus never gets into the flesh at all—that the bacillus, with all its spores and with all its fissions, that we have been so frightened with, are destroyed the moment they spread beyond the place where the bacillus has first taken up its abode; and that is confirmed by this fact, that not yet in this case has there been any one brought to say that he has found a bacillus in blood or in flesh or in muscle. Some people say it has been found, but in what circumstances? In cases where it has been injected into the blood for the sake of experiments, upon guinea-pigs and rabbits and other animals, where it has been, as it were, mechanically mixed with the blood for the purpose of experiment; but I don't think there is a single case—a proved case I mean, not merely people coming and saying they have read of such a thing—but there has not been a proved case where the bacillus has been found in the blood of any cow or bullock, or animal of that description.

Mr. Comrie Thomson.—Dr. Coats at p. 124, question 2192, says, “I found it myself in the blood.”

Mr. Jameson.—What is he speaking of there?

Mr. Comrie Thomson.—The bacillus. He is asked, “Are they not found in the blood at all?—If in very large numbers, they have been found in the blood. But it is very rare to find them in the blood?—It is rare to find them in the blood, because in proportion to the amount of blood the chances are that one would miss the bacillus unless it was very abundant. I have found it myself in the blood.”

Mr. Jameson.—That is not in local tuberculosis. That is in very large quantities, and I said a moment ago—I am now talking of local tuberculosis—I said a moment ago to his Lordship that when the tuberculosis became miliary or general I have no doubt that they would be found in the blood, because they affect the whole system, and that I said was what these gentlemen were speaking of when they said they had been found in the blood. When an animal gets to that stage, the blood begins to get broken up and have those symptoms of emaciation and pallor

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June 17, 1889. in the flesh that comes with general tuberculosis, when the system is all breaking up together. There is this, however, certain that it is not what may be termed a blood disease.

Mr. Jameson. *Sheriff Berry*.—I think Dr. Russell admits that it is not in the blood, although some of the witnesses said it might be carried by the blood.

Mr. Jameson.—Yes. Then a great deal of confusion has been caused by the use of a word which I demurred to Dr. Russell using, but which he knows much more about than I do,—that is the word “virus”—virus of the disease. He uses this for the bacillus, its spores and its products, the first being alive, the second being capable of being created in a living organism, and the third being an inorganic substance altogether, or rather the products of an organism.

Mr. Comrie Thomson.—It is used all through that departmental report.

Mr. Jameson.—It may be, and I accept it as such, but I say it is a confusing word to use, because virus suggests to us something of the nature of a poison that is introduced into the blood and which invades the whole of the system, and is carried into every corner of it by simply the blood going there. Now, that is not the true nature of it, even supposing the bacillus theory to be thoroughly proved—on which I shall have something to say hereafter—because all that is meant by it apparently is this, that the blood may carry the bacillus along with it into different parts of the body; that is all, and therefore it cannot be said—at least, I say it is misleading to speak in this way as Dr. Russell does on p. 32:—“What are the limits of it?—Of course, wherever the blood circulates you may have this virus.” Now, I should say that from the evidence we have as regards the localising of tuberculosis, so far from that being the case, wherever the blood circulates you have this virus killed in local tuberculosis. It is only in general tuberculosis that this bacillus circulates and spreads through the system. Then it is very certain that this organism has no motion of its own, and that is an important matter, I think, because there was also some misleading, or rather not misleading, but I say evidence that is capable of misinterpretation upon this point, as, for instance, when Dr. Russell speaks of this animal having a liking for the lymphatic glands. Now, I am quite aware that Dr. Russell meant nothing more than this, that when this animal came to the lymphatic glands——

Sheriff Berry.—Or rather this creature, because the evidence rather is that it is a vegetable.

Mr. Jameson.—Yes. That when it came to the lymphatic glands it found a congenial soil.

Mr. Comrie Thomson.—Just as strawberries like a particular kind of soil.

Mr. Jameson.—Yes; of course, that is what is meant. But I say that we must divest our minds in this inquiry of the notion that the bacillus is an animal which goes like, the fluke in sheep, for instance, through the intestines and makes straight for the

liver, which is the only place that it has a liking for. It is not an organism of that kind at all. The bacillus is simply a vegetable carried by the blood and killed by the blood in the usual case; but if the blood be weak I suppose, or if it comes upon a weak spot, it may there grow and propagate, but that is all. Then there are two other things, one of which I have already alluded to as rendering the bacillus practically innocuous where it is localised. These are the action of the blood corpuscles and the acid reaction of the muscles, especially after the death of an animal, because the acid reaction seems to be destructive of these small organisms, and they only flourish, it is said, in an alkaloid soil. That, I think, may account for its never having been found in the muscles or flesh of an animal locally affected with tuberculosis, for I don't think that in all the experiments that have been quoted to us has there been any case where the bacillus has been found in the flesh of an animal which was merely affected locally with tuberculosis. There has been some flesh juice got from animals which had miliary tuberculosis, but not where it was merely localised, so that there is another great gap between us and any risk, that not only may it be destroyed by the blood, but really it has never been found in the muscles or flesh. Now, that ends what I have got to say about the unlikelihood, to put it no higher, of the flesh of an animal affected with local tuberculosis containing any seeds of this disease, whether we regard it from the one point of view or the other; and that unlikelihood, I submit, is so great as practically to destroy all risk, even with regard to the flesh of the animal. How little some of the gentlemen in this case thought it is shown by the fact that they tasted the meat raw; and certainly I do submit that, if we consider that there is such evidence of the localising of the disease—of the struggles which the bacillus has to get through in the blood and in the muscles—we really come to this, that where we are sure it is localised only there is practically no danger. But that is all on one side only, because I have not yet got to the end of what I may call the preventives against the spread of this disease by means of ingested food. In the first place, it is not usual in this country to eat meat uncooked, and everybody admits that the proper cooking of meat will kill these bacilli and the spores, except, I think, Dr. Russell, who, I must say, is rather an alarmist upon this point, because he seems to have doubts whether these spores ever die; he calls them immortal.

Sheriff Berry.—They were suggested to be immortal. I take that to mean that nobody knows what is the precise point of heat at which the spore will be killed.

Mr. Jameson.—That is so. At page 33, Dr. Russell says—

“588. Then, it is understood that the spores do not expire, although they are warmed up pretty well?—Really, the recorded experiences of spores are such that one would not reckon that any known process would without fail deprive them of vitality. There is no known process which is absolutely

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Mr. Your Lordship then asks this question—
Jameson. "589. Does exposure to boiling point not destroy vitality?—
"The probability is that it would, if continued for a sufficient
"time; but still, from what I have read and what I know, I
"would be very doubtful of staking my health upon the pro-
"bability that these things were devitalised."

And then Mr. Thomson asks him some other questions away from that point. Now, I think this really shows that the excellent officer of health for Glasgow has got into a state of needless alarm about this bacillus altogether: and if we are to take these considerations into view every time we eat anything, I think we might end in starving ourselves altogether. Nothing is safe; even boiling the spore of a bacillus won't kill it, according to Dr. Russell. At all events, he says it is not certain to kill it. Now, I asked him in cross-examination, or I asked some other person, but I think it was Dr. Russell, what these spores were composed of, because it is generally believed that all organisms are more or less composed of albumen or nitrogen in the form of albumen, and I think he answered that they were—that they did contain albumen and something else. Now, we all know that albumen coagulates at boiling point, which is 212 degrees. Then I asked, "Do you suggest that the spore goes on existing, even after the albumen which it contains coagulates?" To that I could get no sufficient answer. I really submit to your Lordship that we are getting into a too exalted scientific sphere when we are told that boiling the bacillus or a spore won't kill it. You might just as well tell us, as I ventured to put to some of the witnesses, that if you boil a hen's egg you may thereafter get a chicken hatched out of it, and I would like to know who would be believed if they came and told us that in a Court of law. I suppose the reason why Dr. Russell says that is because a spore cannot be seen. But, my Lord, are we upon nonsense of that sort to condemn good wholesome food? Are we really to be forbidden to eat what is good, sound flesh, because, forsooth, we are told that nobody yet has observed the effect of boiling upon a spore or a bacillus, as indeed nobody could, because, as my learned friend Mr. Ure admitted, they are even invisible to the strongest microscope?

Sheriff Berry.—They are invisible unless they are attached to the bodies of the bacilli.

Mr. Jameson.—Yes, they are visible then, because they are in a mass. Now, that shows what extravagance we are apt to get into on this matter, and I do submit that this is certain that cooking is at all events, as Dr. Russell admits in a less alarmist spirit, that cooking is very hard on the bacillus. Some of the other witnesses say the same thing, and I think they frankly admit that if meat is properly cooked there is no danger from it. Now, that of course is a matter which everybody may guard against for themselves. If people are in fear of bacilli—and there are great numbers of bacilli besides this tuberculosis one,

—if they are afraid of germs, of tapeworms, and other interesting parasitical organisms, they must take care to boil their beef well or roast it well, and they can thus protect themselves most thoroughly. If they prefer to run what I consider a perfectly infinitesimal risk for the sake of having their beef a little underdone, why let them do it; but really that a Court of law should step in and condemn meat on account of a very infinitesimal probability of this kind is, I think, asking too much. I point to this as one of the other safeguards that the public have before this meat brings them the slightest danger—that if it is cooked there is no danger from this bacillus, and that ordinary cooking will destroy it, that is to say, as soon as we get up to a temperature of 212 degrees, and that is shown in meat quite clearly by the albumen coagulating, and by the meat, instead of a red, becoming of a brown colour. But after this interesting vegetable has undergone cooking, it has next to meet with the digestive juices. As to that I cannot say it is proved—indeed, I rather think I am compelled to admit the reverse, that it is not proved with certainty that the digestive juices will kill the bacillus, yet they run a very great chance of doing so. Even Dr. Russell, I think, admits that at p. 38:—

“669. But if it is a strong stomach it will throw it off?—It has to run the gauntlet of digestion, and certainly it has a hard time of it.

“670. And that proves that if the tuberculosis is caused by eating tubercular meat, it must be, according to the experience of the country and town, almost infinitesimal?—It is admittedly the most difficult path which the tubercular bacillus can have.” Now, I think that is very honest and very sensible, and I think if Dr. Russell had kept his mind in that frame throughout we might not have had this case here at all, because what does it come to after all? It comes to this, that the bacillus, first, has great difficulty in the cooking, and, second, it is proved by Dr. Russell and every person else that a bacillus won't light anywhere where there is not a nidus for it—that is to say, unless the system of the person whom it attacks is in such a state as will afford a nidus or soil wherein the bacillus may fix itself, and then, if there is a person in that condition, such a person is almost certain to get tuberculosis from inhalation or some other cause utterly unconnected with tubercular meat. Every day we are every one of us running risks far greater than from eating a piece of meat from an animal affected with local tuberculosis, because Dr. Russell himself says, and it is corroborated by all the evidence, that these germs may be floating about in all directions, the great source of their propagation being the spittle of consumptive patients and consumptive cattle, which dries and sets the spores free to go about; and if your Lordship will remember that every one of these spores is infinitely smaller than the motes which we see floating in a sunbeam, you can readily understand what risks we would be exposed to unless our systems could throw them off. But if we are to go about in terror of our lives because these bacilli are floating about, life

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would not be worth living; and so far from these bacilli attacking healthy organisms, they may be regarded as in some sense the scavengers of the universe in exercising a positively beneficent effect by destroying all weaker organisms and keeping up the balance of nature, just as we know that among the larger wild animals the stronger ones attack the diseased creatures among them and make the rest stronger. In the same way physiologists tell us that the great cause of the increase of disease among grouse and such animals is that gamekeepers have killed all the birds of prey, and weasels, and other beasts of prey, so that the diseased animals are allowed to go on and breed, and that produces disease. It may be, therefore, that these bacilli exercise a beneficent purpose, and really, as I say, act as a sort of scavengers of the universe. That, however, is perhaps a little beyond my subject. What I am concerned to point out here at present is that it is exceedingly unlikely that a bacillus, even supposing it to be in the flesh, will survive, first, the process of cooking, and, second, the process of digestion in a healthy subject; while, if the subject is unhealthy, I say that he or she will take tuberculosis from other sources than tuberculous flesh.

I now come to ask, after all this, what facts are they which go to show that these theories which are propounded on the other side are true? I have attempted to show your Lordship what safeguards there are in the way of any danger, first, in the animal itself, and, second, in the person who eats the animal, so as to prevent this tuberculosis spreading and being communicated from the lower animals to man by way of food. But when we ask what experiments are all these dreadful theories based upon, we are told, "Oh, they are experiments by 'ingestion,'" as it has been called; and again, when we ask what ingestion, we find that almost all the experiments are of the nature of injecting food into the bowels, and even into the peritoneum or covering of the bowels of different animals. A great deal has been made of these experiments—more, I think, than ought to have been. Dr. M'Fadyean, I think, sets out this remarkably well at p. 162 of his evidence, where he adopts a passage that had appeared in his magazine, to the effect that the experiments which are generally cited as bearing upon this point are of little value. He says—

"2824. I see in your journal for December, 1888, p. 354, you say this—'But the question of the danger of the flesh or meat from tubercular animals stands as yet on quite a different footing. The experiments that are generally cited as bearing on this point are of little value.' Do you adhere to that statement?—Yes."

He says also, after a long description of certain experiments in an article written by himself—

"2827. . . . I should say that since then I have noted experiments of a similar nature that give a somewhat different result—viz., inoculation and feeding with flesh and muscle juice in which a considerable proportion of the animals experimented with became tubercular. I did not know that at the time, but

“the article was written to show, not that there was no risk, but
“that it had been exaggerated.”

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Now, that flesh and muscle juice was tubercular juice—and that is a fallacy we must guard against in reading this evidence—to suppose that the juice is taken from healthy parts of the body; as I understand, it was juice taken either from the localised tuberculosis of animals or from animals which were generally affected with tuberculosis. After his explanation I put this question to him—

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“2828. And more fuss has been made about this than ought to
“have been made, in your opinion?—I would not put it that way.”

“2829. That is the plain English of it?—I suppose they were
“conscientiously endeavouring to show what was the danger,
“and I thought that the danger was exaggerated.”

I may say that Dr. M'Fadyean in those passages, which I do not read, points out why these experiments were conducted, and the conclusion that he comes to is this, that it is quite inadmissible to adduce these results as proving that “human phthisis comes frequently from the butcher's stall,” question 2825, p. 163, and then he goes on to describe what these experiments were. Accordingly, I submit that we are not entitled to condemn good, wholesome food simply on the inferences drawn from these experiments which are made in such a way that the animals could hardly escape disease, being constantly fed upon tuberculous meat or milk for weeks together. That does not show at all the kind of risk that is run in the ordinary case, and that is, your Lordship will remember, only the risk of eating meat which has been passed by skilled persons as good food and sound flesh, and which has to be cooked and digested. The smallness of the risk is very well brought out, I think, by Dr. M'Fadyean, at the top of p. 162. I read that, I think, or pointed it out to your Lordship before, but I would also point to another statement by Dr. M'Fadyean—

“2815. You view, and quite rightly, the matter as one that has
“not been thoroughly expiscated?—Yes; I think that it is not
“thoroughly investigated. I think the extent of the danger is
“not fully known, but there is a danger.”

“2816. I suppose there is far more danger encountered by us
“every day of taking the spores of bacilli into our lungs than
“there is, even under the present system, of our getting bacilli
“into our bodies by eating cattle which have been locally affected?
“—It entirely depends upon where you go.”

Then, he thinks that they are not going everywhere; but they are to be found in the rooms of consumptive patients, and so on. He thinks that inhalation is the commonest way of getting it, and then comes an important statement—

“2820. I suppose you think very little of the statement that
“the tuberculosis which we have in this country has been caused
“by the eating of diseased flesh?—Yes; I think that is not a
“great proportion.”

“2821. Can you say it is any proportion whatever?—So far as
“I know there is no absolutely conclusive evidence to show,”

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" 2822. You cannot say that it is one in 10,000 cases of tuberculosis?—I think I would not be justified in fixing the number. " I should decline to attempt to state it even approximately."

" 2823. It is your view that the danger of getting tubercular disease from eating flesh from tuberculous animals has been " very much overrated?—By some."

Now, that is very important evidence, because it is by Dr. M'Fadyean, who seemed to me to know fully more about it than any other person who was examined upon that side, and the result of his evidence is this, that he declines to fix the eating of tubercular meat as the cause for a single case of tuberculosis in the human subject. And that is what they practically all say. There is no case of it.

Sheriff Berry.—That is a thing that cannot be proved.

Mr. Jameson.—It is said that it cannot be proved, but it has been proved, as I pointed out, in the case of tuberculous milk. That was proved in that case from Denmark; and why did tuberculous milk produce disease? Because in those cases of tuberculous milk the udder is affected with tuberculosis, and the milk cannot fail to have either bacilli or the elements of disease in it.

Sheriff Berry.—A tuberculous gland?

Mr. Jameson.—Yes. The milk is secreted in the tuberculous gland; it cannot escape it. But my point is that the disease has been traced in the case of milk, and why should it not be so in the case of flesh? If there are numbers of the public getting tuberculosis from eating tuberculous flesh, why has there never been a case of that kind commented on or investigated by any medical man who has appeared here, or by any medical man in the country? Because nobody can say that they ever heard of such a thing. The evidence accordingly stands thus, that your Lordship is asked to introduce a new rule or principle entirely into this trade in Glasgow. Upon what? Upon inferences from experiments which do not answer to the reality—which do not answer to what actually happens in the preparation and eating of butcher meat. You are asked to do this on these experiments, and upon nothing more, because your Lordship has negative evidence to the contrary in this way, that there has not been a case quoted or shown where tuberculosis in the human subject was caused by the eating of tuberculous meat. What is really the whole origin of this commotion? The whole origin of it I take to have been the report of this committee of the Privy Council and the proceedings at the Paris Congress. Now, that congress has been called a veterinary congress, and I think somebody called it a sanitary congress, but I think they are mistaken. It was a congress to discuss the bacillus tuberculosis, and nothing else. Now, we all know that when scientific men make a hobby of a subject they occasionally ride it pretty far. We know that this science of bacteriology is really in its infancy, and we know that it is subject to very great uncertainty from this, that all the organisms are so exceedingly minute—indeed it was said by Dr,

Hime that it would take thousands of them to stretch across the eye of a needle—they are so exceedingly minute that it is very difficult to have reliable experiments with regard to them at all. It is matter of common knowledge in the scientific world that a few years ago some eminent French bacteriologist discovered to his own satisfaction, and proved by experiments such as we have heard of here, the fact of spontaneous generation. M. Pasteur disposed of that theory altogether, and disposed of the experiments by an elaborate series of experiments, but which were open to the same objection as some of the witnesses on the other side took to experiments he made—that they were merely negative; that is to say, he took mixtures of hay and water and such things, and enclosed them in glass cases, allowing no air to come near them except what passed through an iron tube heated to a white heat, and so doing he found no bacilli or bacteria in the mixture of hay and water at the other end of the tube.

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Mr. Comrie Thomson.—This is very interesting, but it is not evidence.

Mr. Jameson.—It is a perfectly fair comment upon this sort of experiment, and I think it is mentioned in evidence. It was put to Dr. Russell on page 37—

“644. And one eminent Frenchman thought he could get “germs without any antecedent life?—It is a very old question,—biogenesis, or abiogenesis.”

“645. Did he not think that he had discovered abiogenesis?—“Yes.”

“646. And was it not substantially contradicted by M. Pasteur? “—Yes.”

Then he is asked about the cholera bacillus. Now, the cholera bacillus was another great invention, and it had a very short life apparently, because nobody believes in it now. Dr. Littlejohn, it is true, is waiting on till the next outbreak of cholera, when he hopes to settle the question.

Sheriff Berry.—Hoping, I suppose, that the time may not soon come.

Mr. Jameson.—Yes, hoping that it may not soon come. I mention these things for the purpose of showing that we are really not going to decide a practical question like this upon the theories of scientific men meeting at Paris or elsewhere. I much prefer to go upon the Sanitary Congresses at Brussels and the Hague, composed of gentlemen who knew quite as much about this matter, and probably more than some of those other scientific gentlemen at the Paris Tuberculosis Congress, and who all went in for the preserving of the sound flesh of animals which were only locally affected with tuberculosis. They viewed it from a practical sanitary point of view, and not from the alarmist point of view of the scientific people whose whole minds were filled with this bacillus; who, I may say, had bacillus tuberculosis on the brain, if not in it. The state of science on this matter is very well set forth in a number of extracts, to which I would invite your Lordship's attention. They are far too long

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for me to read; but your Lordship will find them on pages 244, 245, 246, 247, and 248 of Dr. Hime's evidence, where he quotes from eminent authorities in France, Germany, and elsewhere, for the purpose of showing that none of those eminent men who have studied this subject think that the flesh of animals merely affected locally with tuberculosis should be thrown away. That is the state of scientific opinion upon the subject; and I submit to your Lordship that the state of scientific opinion over the world on the subject is that we should not have good flesh wasted merely because an animal has a nodule or two of this tuberculosis in its lungs. That is the opinion of the bulk of scientific men all over the globe. Further, I say, to go to the practical side of the question, what do the sanitary authorities in various countries do? Now, we have it in evidence that there is no place where this subject has been studied more fully than in Prussia, and no place where the inspection of cattle is more stringently carried out than in the capital of that country, Berlin; and we find from a passage which was quoted in Dr. M'Fadyean's evidence, p. 161, question 2803, that in Berlin in one year there was an enormous quantity of cattle passed, and 8322 organs or parts were withheld from consumption, which I suppose means that 8322 carcasses of animals locally affected with tuberculosis were passed by the sanitary authorities of Berlin as fit for human food. And the same thing holds in France, in Hamburg, and elsewhere, as is set forth in Dr. Hime's evidence, immediately following the passage I have already referred your Lordship to. My learned friend Mr. M'Kechie asks me to point out, and it is an important fact, that this return for Berlin is for the year 1888. That is the practice in other countries as set forth by Dr. Hime, who took a great deal of trouble in correspondence about this matter, on pp. 248, 249, 250, and 251. The result is that France is the strictest of all these countries upon the matter; but even in France they do not venture the length that Dr. Russell proposes to lead the authorities in Glasgow, because in France they pass the flesh of an animal locally affected with tuberculosis unless it is affected to a very great degree in one organ or lining surrounding it. There is in the conflicting evidence as to whether this bullock and cow would have been passed under that decree. Dr. Hime and our witnesses say that it would, and the witnesses on the other side say that it would not; but I submit to your Lordship that the bulk of the evidence goes to show that the terms of the French decree would let this cow pass, and for this reason—that it has been absolutely proved, I think, that the cow was simply locally affected with tuberculosis, that it was not spreading, and that instead of an organ being largely attacked with it, only about one-twelfth or one-fourteenth part of each lung was affected, and that, of course, was a comparatively small part. Then, instead of there being any traces of emaciation or anything of that sort, there was an utter absence of them. Therefore, I submit that, even under the French decree, this cow would have been passed. Of course, we are not under that decree here; we are under the Public Health Act; and I do submit that

under that Act there is no reason for condemning the flesh of either of these animals as unfit for human food. Then, I would point in this connection to what is the practice in this country, because we have had here medical officers of health from a great number of the large towns of England. We have, for instance, Dr. Goldie from Leeds; we have Dr. Hime, who was at one time in Bradford, at another time in Sheffield; we have Dr. Gibbon from the Holborn district of London; we have Dr. Hill from Birmingham; we have Dr. Mason from Hull; and we have Dr. Young, the police doctor in Glasgow. These are all authorities in their own line, eminent authorities. They are gentlemen to whom is entrusted the care of the health of these large cities, and who have exercised their offices with such advantage that the death rate has gone very largely down; and everyone of these gentlemen is of opinion that there is really no danger, no risk, in using the flesh of animals merely locally affected with this complaint, provided the flesh be in itself sound and healthy; and they take as a practical test whether the flesh cuts well and stiffens well up, or whether, on the other hand, it is soft, watery, and pale in colour—a sensible practical test by which they can distinguish in a moment, as an experienced officer can, bad meat from good meat. Now, I ask your Lordship to put the evidence of these gentlemen against the evidence on the other side. With regard to the witnesses on the other side, undoubtedly no one will dispute the great ability and care of Dr. Russell as medical officer of health for Glasgow; but I must say this about Dr. Russell, that his whole information upon this subject, as he himself most frankly admits, is taken from the report of the departmental committee and the report of the Paris Congress. I refer your Lordship to what he says on p. 40:—

“694. Is your knowledge derived from those books?—My knowledge is derived from careful reading of the literature of the subject.

“695. How much literature?—The departmental report and the official report of the Congress.”

Now, I have just one word to say with reference to Dr. Russell's reliance upon these books, and that is this, that with regard to the results laid down in paragraphs 45 and 46 of the departmental committee's report, which have been so much founded upon, no person has been able to put his finger upon any evidence which supports the conclusions there stated. The witnesses for the prosecution were asked to do so; they could not do it. Our witnesses said there was no evidence whatever to support them. The only thing that the witnesses for the prosecution took refuge in was that they were inferences from the experiments which had been made; but I don't think there was evidence of any such experiments, except in the case of the soldier's wife, or whatever she was, and I don't think that was a case in point. With that exception, there was no evidence to warrant the committee in coming to the conclusions they did in these paragraphs.

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June 17, 1889. *Mr. Comrie Thomson.*—I beg your pardon; I specially put my finger upon the evidence of Mr. Lingard and Sir Charles Cameron.

Mr. Jameson.—I shall be glad to hear what my learned friend founds upon in their evidence as showing that these conclusions were justified. I have no time to stop and enquire into it just now; either I or my learned friend Mr. M'Kechnie will reply to what he has to say on this matter; but I submit to your Lordship at present, as our attention has been drawn to the report, that there was no evidence warranting that portion of it. Then, as to the Paris Congress, it was, as I have pointed out, a collection of people brought there, so to speak, to set up this bacillus tuberculosis—a sort of cult of this bacillus. They were there to exalt its power and influence in the universe, and they succeeded in doing so to their own satisfaction, especially to the satisfaction of Mr. Robinson from Greenock, who I must say had very early become inoculated with their ideas.

I think that really concludes what I have to say on the main part of the case; and I have only now a few remarks to make upon what fell from my learned friend Mr. Ure. His first point, that this is a widespread disease, of course I do not deny; but I have also to say this, that I think he was mistaken in putting the death rate from it so high as he did. I have a note that it was 17 per cent., and I think your Lordship will find that that is nearer the number.

Sheriff Berry.—I think so. I think that is what Dr. Russell said.

Mr. Jameson.—I think it is 17 per cent. in Glasgow.

Sheriff Berry.—I think Mr. Maylard put the cases coming into the Children's Hospital at from 40 to 50 per thousand.

Mr. Jameson.—That was so.

Sheriff Berry.—He was not speaking of the general proportion of deaths from this disease throughout the city.

Mr. Jameson.—No. I think your Lordship will find it was 17 per cent. But nobody can say that even 1 per cent. or any percentage of that 17 was caused by eating tuberculous meat: and the death rate has decreased almost 4 per cent. during the last few years, even under the present practice at the slaughter-house. Then, Mr. Ure laid down as a proposition that the disease was identical in man and the lower animals. I also accept that.

Sheriff Berry.—You say that the deaths from this disease have decreased during the last four years under the present practice, but that practice has existed for more than four years.

Mr. Jameson.—Yes, far longer. It has always existed, because there has been no alteration in the practice.

Sheriff Berry.—What I mean is that you cannot trace the decrease in the last four years to the practice, because the practice would have produced the same result in earlier years.

Mr. Jameson.—Quite so: I don't think it can be traced to that. Then, Mr. Ure laid it down as another proposition that the disease is communicable from animals to man by inoculation

and ingestion. I don't think that has been proved, if he means ingestion by way of eating flesh from an animal only locally affected.

Sheriff Berry.—You admit ingestion by milk?

Mr. Jameson.—I think so. I think that is proved; and I think your Lordship will easily see what a very different case that is from the present.

Sheriff Berry.—I quite understand that.

Mr. Jameson.—Then there is the fourth proposition, that tuberculosis is due to the presence of a specific organism. Now, that is a very nice scientific question, and I don't think it is really worth my while arguing it, because we are here on a practical question, and I have dealt with the practical considerations which should govern us in the consideration of this case. But I must say that it does not seem to be perfectly settled that the passage which my learned friend quoted to us as having been discovered during a Sunday hunt by Mr. Anderson does not support his view, because the end of the passage is this—"Koch does not wish it to be concluded from the existence of bacilli in the tuberculous neoplasms that these parasites are the agents which cause the formation of the growths; for though he is led to believe that a close connection may exist between them it is as yet merely a conjecture, which can only be established as a fact after further researches." Then, about this pabulum, that is a phrase that Mr. Anderson is not alone responsible for. In the evidence before the departmental committee, Dr. Peel Ritchie of Edinburgh, question 7588, uses the following phrase:—"What is your opinion as to how the disease is generated?—Since Koch demonstrated the presence of bacilli I must regard the bacilli as the exciting cause of the disease. These bacilli seem to be introduced into our systems in various ways, but we must have in our system a sufficient pabulum or nidus upon which they may germinate and increase." Now, all that Mr. Anderson meant, and he said it in re-examination, was this, that he holds it not to be proved—and Dr. Dougall says the same thing—he holds it not to be proved that the pabulum does not precede the bacillus as against the view that the bacillus precedes the pabulum, so to speak. They, in short, take this view, that tuberculosis is really a degenerated condition of the system, and that whenever the bacillus finds that out it goes and makes its abode there.

Sheriff Berry.—There must be a place for him to live in.

Mr. Comrie Thomson.—Of course, the pabulum must be there first.

Mr. Jameson.—The pabulum must be there first; and Mr. Anderson merely says this, if you are taking these cultures of yours, these small creatures, you cannot be absolutely sure that you do not take some of the pabulum with them, and who can tell whether it is not the diseased tissue that communicates to the other tissue this disease on which the bacillus lives and thrives. Well, I am not concerned to defend that theory. I can only say that it seems to me there is something to be said for

June 17, 1889. Mr. Anderson's view, and for Dr. Dougall's view, and it certainly explains some facts which the other theory does not, and that is the heredity in consumption, especially where it skips over one generation and reappears in the next. If I were to venture an opinion of my own on such a nice question, I should probably adopt the bacillus theory; but these facts point to this, that it is not universally accepted among students of the subject that the bacillus, wherever it goes, produces this disease. It really comes very much to this, that you have a degenerated condition of the tissue before the bacillus can do any harm to the affected person; and what does that amount to? It amounts to this, that to a healthy subject the bacillus will do no harm, and therefore the damage that can be done by eating tuberculous meat is perfectly visionary; it is infinitesimal; it cannot be appreciated; and I accordingly ask your Lordship to hold that it is not proved that there is any risk here from eating the flesh of these animals, and that it cannot be said to be, in the words of the complaint, "unfit for human food." I accordingly ask that there should be an acquittal.

Mr Comrie
Thomson.

Mr. Comrie Thomson.—My Lord, it is now my duty to sum up the case on behalf of the Local Authority, and I feel that my learned friend Mr. Ure has addressed your Lordship so exhaustively on the whole case that I will be able to discharge my task within, I hope, a very short space of time. It would not be easy probably to exaggerate either the interest or importance that attaches to the question that your Lordship has to try; but at the same time, I am glad to know that, even if your Lordship were to give effect to the fullest extent to the view which the Local Authority invites you to adopt, the destruction of meat intended for human consumption in Glasgow would not be anything like so enormous, or the consequences so disastrous as my learned friend Mr. Jameson seems to anticipate, because I find from the evidence of Mr. M'Lellan, the inspector, that the flesh of animals affected with tuberculosis more or less in Glasgow is $\frac{1}{2}$ per cent. in the year. That number or proportion includes both those animals which are passed, the affected portions being removed, and those animals which are not passed on account of the disease having advanced to so great an extent. That is a comparatively small matter; and therefore, when my learned friend insists so frequently upon the possible destruction of good, wholesome food, there is really very little risk of such a catastrophe, even if the highest and strictest view of the inspector's duty should be hereafter taken.

My Lord, the question that you have to determine is whether you are to be guided in this matter entirely by empiricism, or whether you are to allow the light of scientific inquiry to guide you. I use the word "empiricism" in no offensive sense, but in its original meaning, as equivalent to the result of experience, apart from scientific deduction. I quite admit that, if it were necessary that your Lordship should have evidence laid before you which proves to demonstration that men have died from

eating the apparently healthy portion of an animal suffering to a slight extent from tuberculosis, I have not been able to supply such evidence. But the authorities of this city, having had their attention drawn to the progress of scientific investigation during the last ten years in connection with this matter, have thought it to be their duty,—expressing, I have no doubt, no dissatisfaction whatever with the way in which their then medical officer of health discharged his duty,—to associate with him in the meantime two other experts by whose advice they thought it right they should be guided in the question of passing or refusing to pass meat intended for human consumption; and in that way it came about that Dr. Russell and Professor M'Call were of recent months associated with Dr. Young in this inspection.

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Mr Comrie
Thomson.

It is noticeable, and I think it probably may be of importance in view of certain authorities that I see on the table in the immediate neighbourhood of my learned friend Mr. M'Kechie, that your Lordship should observe that this prosecution is not brought under the local statute, although the local Police Act deals with unwholesome meat in more than one of its sections. This prosecution is founded entirely upon the 26th section of the Public Health Act; and the issue that your Lordship has to try is this, whether the carcase, meat, or flesh was exposed for sale, or whether there was probable cause for believing it to be intended for human food, and if it appears to you to be unfit for that purpose, it will then be your duty to grant a warrant for its destruction. That it was intended for human food is not disputed. The question is whether it was unfit for the food of man. Now, that, of course, is an expression which is open to interpretation. It either may mean that the substance itself is proved to be unwholesome or innutritive, or it may mean that it is in such close proximity to a portion of flesh which is so visibly affected, as to raise a strong probability that the apparently healthy tissue itself is also unfit for the food of man, and in that case it must be destroyed. I appeal to my friend's leading witness, Dr. Hime, who defines food as unfit for the food of man when the animal to which it belongs is suffering from an infectious disease communicable to man, and he classes under that head the disease of tuberculosis. The policy of the statute is that the unskilled buyer and consumer shall not be exposed to the risk of eating that which may be injurious to him; and if your Lordship is satisfied upon the evidence which you have heard that there is reasonable ground—I don't require to go further—that there is reasonable ground for doubting the fitness of the carcase in question for being used as human food, then I say that it was the duty of the inspector to refuse to pass it, and it will be your Lordship's duty to condemn it. Of course, legislation of this kind and the giving to it practical effect is always attended by a certain amount of inconvenience and loss. That varies in different cases but the maxim applies, *salus populi suprema lex*, and the one consideration which your Lordship

June 17, 1889. has to keep in view is this, whether this law is not to be administered fearlessly,—I mean fearlessly with regard to possible economic loss,—on account of there being an overwhelming necessity that the public health should be considered before any question of pounds, shillings, and pence. Now, that principle, as my learned friend pointed out in another connection, has been acted upon for years and years past in every civilised community in this country. My friend's witnesses are all driven to admit that; it comes to be a question of degree. If it were not the case that the whole trade, as well as the whole scientific world, is convinced that a tuberculous animal may be an unfit thing to consume as food, and that the reason for that unfitness is that the consumption of it may communicate the disease, a specific disease, to the consumer, then not a single animal would have been condemned in Glasgow. The inspectors, by a kind of rule of thumb, by a kind of instinct it may be, partly acquired from their experience, say, "Oh, this animal is tuberculous and so is that; we pass the one, but we refuse to pass the other, because the one is not quite bad enough, so far as we can see with the naked eye." And that I should imagine was a very reasonable course to follow, so long as there was no scientific light to guide them. It was a perfectly sensible thing to do; and I quite sympathise with those who maintain that unless the deductions of science have rendered our knowledge of the subjects more clear and distinct, it is a practice that might very well be followed yet. But what I am to submit to your Lordship in what I have yet to say is this, that science has established beyond all room for question that in an animal in which tuberculosis is visible anywhere—and certainly I do not put it too high when I put it this length—where tuberculosis has manifested itself not only in the lungs and other viscera, but where it is present in any part of the cavity of the body, and where it has begun to disseminate itself, either visibly or not, in the lymphatic glands, then every portion of that animal is proved, as far as a thing can be proved which is not capable of actual ocular demonstration, to be unfit for human food. Accordingly, you see that even those who deny that this disease is systemic, and is communicable by ingestion, are absolutely inconsistent in their conduct with the theory which they profess to maintain. There would be no need for destroying any animal, even in the advanced stage of tuberculosis, if the theory which the Local Authority invites your Lordship to adopt were not a sound one—namely, that the disease is capable of dissemination through the tissues, and that it is capable of being communicated to man by the act of consuming. In the same way, all that my learned friend has said so well about the effect of cooking and of the digestive juices is plainly rejected by those whose practice he is maintaining. If the operation of heat in cooking is sufficient to render these tuberculous tissues perfectly wholesome, why do they ever stop any tuberculous animal from getting into the market? If it be true that by boiling and by roasting any mischief can be prevented, then why don't they put it all into the market?

Mr Comrie
Thomson.

But the evidence upon cooking is, I think, perfectly distinct. My friend's analogy about the boiled egg fails altogether, because we are not dealing here with an animal; we are dealing with a vegetable; and it is well known, it is in evidence, that the spore of a vegetable, the seed of a vegetable has much greater vital power than the vegetable itself, and has much more vital power than the spore of an animal has, and accordingly that which would be sufficient to kill the ovum of the hen is not sufficient, or at least is not necessarily sufficient, and is probably not sufficient, to destroy the spore of a vegetable. But my learned friend's own witness Dr. Imlach, who, although a ladies' doctor, seems to know a great deal upon this subject, says on page 232, "3928, Look at article 35: 'Evidence also has been laid before us to show that, although rarely, the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.' I think you said that you did not agree with that, and that there was no evidence to support that?—I don't mean to say that. I quite agree that if bacilli were there, and if they were virulent, cooking would be often insufficient; roasting would be insufficient; proper boiling would probably be sufficient."

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Mr. McKechnie.—That is "buried in the interior of the limbs." That is the assumption.

Mr. Comrie Thomson.—Quite so; but it does not matter where they are so long as they are exposed to heat. The point is this, will any cooking that we are accustomed to, any cooking that is very likely to be used, suffice to destroy these creatures? The evidence is all the other way. There is a good deal of other evidence on the subject, but I don't think I require to trouble your Lordship with it. It is plain, and we all know it, that so far as roasting is concerned, a large portion is left comparatively underdone, and therefore the amount of boiling that is necessary effectively to destroy these creatures would be such that the whole joint would be pulled to shreds—the whole substance would be taken out of it. At all events, it is quite sufficient for your Lordship, that, in the opinion of the scientific men who have been examined, including my friend's witness, Dr. Imlach, and also including the experts who reported to the Committee of the Privy Council, ordinary cooking is insufficient to destroy these organisms. Then, when you come to the counteractive effects of the digestive juices, you have on that subject the evidence of Dr. Coats, on page 126:—

"2223. If you add to that that the flesh is cooked instead of being raw, and that the alimentary canal is subjected to the digestive juice, does not that show that these experiments cannot be compared with meat that comes from the butcher's stall, as it is put there?—In answer to that question I would say that the alimentary canal, like the peritoneum, is undoubtedly capable of absorbing the bacillus tuberculosis, and also that the juices of the alimentary canal are proved not to be fatal to the bacillus.

June 17, 1889. "2224. They are not fatal in every case?—They are not generally fatal, as shown by the frequency of tuberculosis of the intestines following tuberculosis of the lungs."

Mr Comrie Thomson.

"2225. Is not the gastric juice fatal to the bacillus?—No.

"2226. What do you say about cooking?—You can never ensure that it is efficient.

"2227. But if people took care that they cooked their meat?—You would need to appoint a public cook.

"2228. If the meat is thoroughly cooked you destroy the bacillus?—If you are fond of underdone meat you might call it properly cooked.

"2229. I mean, cooked up to a temperature of 212 degrees?—If you could ensure that the public would do that, then it would be safe enough."

Then Professor M'Call, p. 171, says:—

"2925. In paragraphs 24 and 25 they say—'Numerous experiments have similarly been performed upon the possibility of the tubercular virus entering the body through the alimentary canal. In these experiments tubercular secretions, *i.e.* mucus, saliva, milk, &c., portions of tubercles from diseased tissues and cultures of the bacilli have been swallowed by various animals (calves, pigs, sheep, rodents, fowls, &c.), with the effect that the disease has fatally followed the ingestion of such infective material. It is obvious, therefore, that the digestive fluids do not necessarily exert an injurious influence upon the poisonous bacili.' Do you agree with that?—Yes.

"2926. The result of that being that the secretions, the gastric juice and so on, do not necessarily prevent the bacilli becoming noxious to the human frame?—That is my belief."

My learned friend desiderates, and this is his principal point, that because there is no proof that anyone has been killed by the eating of tuberculous food, it should not be prevented. I have pointed out to your Lordship already how inconsistent that is with the existing practice. There was one witness for the defence, I think, who declared that except that it would not be nice to think about, he could see no harm, no probable reason against eating a tubercle itself. Well, he would be justified in that position on the same ground that my learned friend justifies his position, because it is quite true that it has never been proved that any one died from eating a tubercle. I just wish, in a very few sentences, to point out to your Lordship how that matter stands, and how it stands with reference to the comparison that is made as to milk. My learned friend says it has been proved, or it has almost been proved, that people may be injured and may die from the consumption of tuberculous milk; why is it that there never has been one instance of any one suffering injury directly proved to have resulted from the eating of tuberculous meat? Well, just notice this, when the meat is consumed—and no man, I suppose, intentionally takes tuberculous meat—when the meat is consumed the meat disappears; when the milk is consumed the cow lives. The meat can never be examined to see whether it was tuberculous; the cow can, and you find from its udder

whether it is tuberculous or not. The bit of evidence which is absolutely necessary to complete your proof is destroyed in the one case and remains in the other. But what Koch says on this subject is exceedingly instructive. He says, on page 197, "The relation between human and animal tuberculosis particularly *perlsucht*, is a similar one. Here, too, in spite of differences in the anatomical conditions and clinical course, they must be regarded as identical diseases on account of the identity of the parasites to which they are due. Much has indeed been made of the absence of complete proof that *perlsucht* is transmissible to man. But, on the other hand, the following must be remembered. Owing to the extremely slow development of the disease, by the time the first symptoms come to light the place and time, and therefore the source of infection, can generally be no longer determined or not in a satisfactory manner. Common as tuberculosis due to inhalation is, the mode of infection can be fixed with scientific accuracy in only relatively few cases. Much less will this be possible in the considerably rarer cases of intestinal tuberculosis resulting from the consumption of the flesh or milk of cows with *perlsucht*, because here the uncertainty will be still more increased by the ease with which other and commoner modes of infection may be mistaken for the true one. It is therefore much to be doubted whether a single case of tuberculosis in the human subject will ever be referred unquestionably to the partaking of the flesh or milk of tubercular animals. But when we consider that by inoculation of the most different kinds of animals (cats, rabbits, guinea-pigs, field-mice) with pearl-nodules and the pure cultures proceeding from them, a disease is produced with the greatest regularity, which exactly resembles in its anatomical features the disease occurring in these animals as the result of inoculation with tubercular material, and which just as certainly leads to the death of the animals, we cannot imagine that man is an exception with regard to this pathological poison. So that if it should yet be proved in the course of further researches that there is any other difference between the bacilli of tubercle and *perlsucht*, which would compel us to regard them as nearly related yet belonging to different species, we should then nevertheless have every cause to consider the *perlsucht*-bacilli as in the highest degree suspicious. From a hygienic point of view the same precautions must be adopted against them as against infection by tubercle-bacilli until it is proved that in the human being *perlsucht*-bacilli may with safety be brought into contact with wounds of the skin, and that they or their spores can be inhaled or swallowed without giving rise to tuberculosis." This has been noticed by more than one of the witnesses. The experiment can never be made upon a man in any way that is satisfactory, because you would, in the first place, require to feed him on tuberculous meat, and to exclude every other article of diet, and then to kill him. Now, the law won't allow that, and you cannot have your experiment leading to any satisfactory result, except under these conditions.

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 Mr Comrie Thomson. It can only be made with the destruction of the meat, which is the one factor in the experiment, and the slaughtering of the man, which is the other factor, and is not permissible. Then, just leaving this subject with one other observation, I confess I was very much astonished to hear my learned friend attempting to maintain that although a man may be injured and poisoned and become tuberculous himself by the drinking of tuberculous milk, still it did not follow that he would suffer injury from the eating of tuberculous meat.

Mr. Jameson.—Not the meat from the sound flesh of a locally affected animal.

Mr. Comrie Thomson.—That is consistent with the rest of my friend's position; but if once the apparently sound flesh of a locally affected animal is proved to be affected, although you cannot see it, then surely it is just as hazardous to consume that flesh as it is to drink the milk. If it be the case that the apparently sound flesh is really not sound, then the consumption of the flesh by mastication is surely just as likely to be dangerous as the consumption of the milk by drinking.

Sheriff Berry.—You mean that in every case where localised or local tuberculosis, or whatever you call it, is shown to exist, you must conclude that the disease pervades the whole system?

Mr. Comrie Thomson.—That is not my point just now. My point is this, assuming that in every case where there is local tuberculosis the whole animal is or may be affected, then the mischief arising from eating its flesh is just as great as the mischief arising from drinking its milk.

Sheriff Berry.—Yes, if you assume that.

Mr. Comrie Thomson.—That is the point I make, and that is the distinction that my learned friend attempted to draw from several of the witnesses, and which I thought he had repeated in his address to your Lordship; but I find I had misapprehended him, and I accept his explanation.

Leaving these more general considerations, I come now to deal shortly with the detailed facts of the case, or rather of the cases. My learned friend Mr. Jameson confined himself to the case of the cow whose owner is his client, but I shall have to say something both with reference to that animal and to the bullock whose owner my friend Mr. M'Kechie represents, as I shall not have any reply to him on the subject. Mr. Jameson, I think, stated accurately enough that the first question was whether the flesh was sound and wholesome, and that the second was whether such risk with regard to those portions that were apparently sound had been proved as to warrant the condemnation of the animal. Now, there are two grounds upon which I say that both of these animals should be condemned. In the first place, because the tuberculous disease had advanced so far in both of them that, even according to the present modes, and apart from the more modern and severe view about which we have heard so much, they ought to have been seized. I think there can be no doubt about that with reference to the cow. The other view is that, even if they would not have

been properly seized under the existing practice—the practice that has hitherto existed—yet the evidence has established this, that there was so great risk connected with their consumption as food as to warrant their seizure. With regard to the cow this is proved, that both of the inspectors, M'Lellan and Beresford—and certainly these officials did not exhibit any desire to strengthen the case against the accused and in favour of the Local Authority—who maintained the view, or at least seemed to maintain the view, that they were fully as good judges in the matter as any medical man or scientific man could be, saw that there was something far wrong with the cow, and that it was suffering from chronic tuberculosis. It was found by the naked-eye examination to have advanced at least to this extent, that there were tubercles in the substance of the lungs themselves, in both the costal and the pulmonary pleura and in the pleura which is connected with the diaphragm, and further, in the cavity of the body enclosing the respiratory organs. Now, Dr. Walley and Dr. Littlejohn concur in saying unhesitatingly that that would have been sufficient, apart altogether from the more advanced view, to justify the condemnation of this cow. Of course, if that view is too strict a one, then one is driven to ask you to consider what was discovered as the consequence of a microscopic histological examination of the animal; and there it is proved I think beyond doubt that in more than one of the important glands bacillus tuberculosis was found. Of course, that opens up the larger question as to whether that would be a sufficient reason for condemning the whole carcase, apart from the condition in which the animal was visible to the naked eye; but I ask your Lordship, with regard to the cow, to condemn its carcase in respect of the view which is commended by Dr. Walley and Dr. Littlejohn, and to condemn it irrespective altogether of the more advanced and strict view which constitutes the most prominent part of this inquiry.

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Sheriff Berry.—Then you don't, as I understand, think it necessary to rely upon the evidence of the microscopic examination, and therefore, to raise the question which I understood Mr. Jameson to raise, whether really those parts of Mr. M'Geoch's report do relate to the cow, and whether they show that in the lymphatic glands bacilli had been found?

Mr. Comrie Thomson.—I think there is enough apart from Mr. M'Geoch's report to justify your Lordship in condemning the animal. At the same time, if you think that is doubtful, and if you are driven to consider Mr. M'Geoch's report, then I ask your Lordship to take the plain construction which the words themselves bear—that he says he found bacilli in the inguinal gland, that is in the inguinal gland of the cow—the words “of the cow” governing the whole of the previous part of the sentence. But what I do found mainly on with reference to the cow is this, that there was here tuberculosis of long standing proceeding from one stage to another—part of it stiff and cheesy, part of it becoming chalky—but still active and of long standing,

June 17, 1889. and having had a visible effect upon the whole texture of the muscles, because we are told by all observers that the flesh was abnormally dark, and that that was suggestive of a diseased condition.

Mr Comrie
Thomson.

Sheriff Berry.—You don't think there is any ground for saying, as Mr. Jameson suggested, that this disease was not only quiescent, but had been arrested?

Mr. Comrie Thomson.—I think the answer to that is to be found not in Mr. Geoch's report, but in his evidence, where he says at page 103—

"1788. Did you examine the lungs and lymphatic glands of the cow?—I did.

"1789. What did they exhibit?—Tubercular deposit."

And then he goes on to deal with the bullock; so that I think apart from the question of this actual gland, the inguinal gland, it is proved that there was such an amount of tuberculosis visible in the whole of the lung, substance, lining, and cavity, and that it was discovered in the glands, showing that there had commenced dissemination, which necessarily was active,—I say there is enough there to warrant, without any hesitation, the condemnation of that carcass. The bullock, I quite grant, falls under a different category; and although I am to submit to your Lordship that it would certainly have been destroyed under the French decree, on which I shall have something to say immediately, probably it would not have been destroyed under the former practice in Glasgow, because it seems to me to be admitted that the carcass of the bullock, which was a good bullock to start with—a prime beast, fit for the market—the carcass of that bullock I think would have been passed undoubtedly under the old system. But there I am to ask your Lordship to apply the evidence which we have heard in this case, and to condemn the carcass of the bullock also, in respect that it is proved not perhaps with absolute certainty that the whole of it was morbid, was affected by tuberculosis, but that there was so serious a risk of that being so that in the interests of the public they must have the benefit of the doubt, and your Lordship must order its destruction. Now, there was active tuberculosis present in the lungs and lining and in the pre-pectoral gland.

Sheriff Berry.—Active tuberculosis?

Mr. Comrie Thomson.—Yes, present in the lungs and lining of the lungs, and microscopic investigation disclosed that tuberculosis had got into the glandular system. Now, Dr. Littlejohn and Dr. Walley said, "If we were satisfied of that, that would be quite enough for us." Dr. Littlejohn said, "If we did not know that, and if we had only been judging of the condition of the beast from the appearance of its flesh and from the diseased condition of the lungs, then under the old system, it would have been passed after the lungs had been removed, and the skirt, and so on, taken away." But even under the old system he tells you that if they had been able to discover, or if he had been sure that the lymphatics had taken up the poison, and that it was in course of being disseminated by them, that would have

been quite sufficient to justify the condemnation. I quite admit that this bullock fairly raises the question which is of the greatest importance in this case, whether you in Glasgow are to adopt the system which has been adopted in Edinburgh and in Greenock and in Paisley, and to refuse to allow admission to the market of a carcase which is perceptibly affected with tuberculosis in a limited area, although there are no visible signs that the disease has become generalised. That depends entirely upon the matter of scientific opinion; and the question that your Lordship has to determine—and I don't think it is one free from difficulty—I am sure it causes your Lordship no small anxiety, because it is far-reaching—is, where is the preponderance of the testimony? Is it on the side of the Local Authority, and the view that they are advised to take, or is it with the respondents? Now, of course, it is a fair observation for the respondents to start with, that the *status quo* ought to be preserved unless some good reason shall be shown for a change; and I quite sympathise with many of the observations that were made by my learned friend Mr. Jameson to the effect that a Court of law is not primarily to settle disputed scientific questions, or to encourage what in popular language we are accustomed to call “fads.” I quite grant that; but, on the other hand, I am sure your Lordship will acknowledge that one of the most important functions that you have to discharge is to see that, when science has demonstrated that a certain state of opinion leads to laxity in the administration of the sanitary laws, and that the public health is endangered, then you will be quick to give effect to the results of such scientific enquiry, and will not be debarred from doing so by the mere statement that possibly those scientific men may not have arrived at the end of knowledge on the subject with which they are dealing. And your Lordship cannot help, I should imagine, feeling somewhat relieved of the difficulty which attends the question from the circumstances that, as I have mentioned both in Edinburgh and the adjacent towns of Greenock and Paisley, and, I think, to some extent in Leeds, the modern practice has been adapted to the results of modern research.

Sheriff Berry.—Is it so in Leeds?

Mr. Comrie Thomson.—It is not so distinctly stated as to Leeds, but something was said about it with reference to the practice in that town.

Mr. McKechnie.—I think Dr. Goldie said he would pass both animals in Leeds.

Mr. Comrie Thomson.—This is what Dr. Goldie says at page 205:—

“3497. If you found the virus of the disease in any of the lymphatic glands, would that affect your view at all?—Yes, certainly.”

“3498. Why so?—I consider that if the animal is suffering from localised tuberculosis, and I find that from an examination of the localised tuberculosis the glands have become affected or broken down and tuberculosed, I would say that is very much like a systemic poison.”

June 17, 1889. "3499. And I understand you would have condemned this animal according to the practice at Leeds if you had found in the inguinal glands any evidence of the presence of the virus?"
 Mr Comrie Thomson. "—Yes."

Then he says—

"3500. I suppose you don't tender yourself as an expert upon tuberculosis and the tubercle?—No.

"3501. With regard to the bullock, do I understand you to say that you found no trace of any kind of disease in the bullock?"
 "—No, I do not say so.

"3502. What trace of disease did you find?—I described it as carefully as I could. One was pleuritic adhesions of a very simple character.

"3503. In your opinion was the bullock when killed suffering from tuberculosis?—No, nor any piece of the carcase when I saw it."

Sheriff Berry.—His answer to question 3509 is probably what you are referring to.

Mr. Comrie Thomson.—Yes; he says there—

"3509. I suppose I may take it with reference to the bullock as with reference to the cow, that if you had seen in the glands evidence of the virus in the prepectoral glands you would have condemned the animal?—Yes, but I should never expect to see it."

Sheriff Berry.—I quite understand that. He says in this particular case if that had been shown he would have condemned the animal, but he does not say that they would condemn an animal simply on the evidence of disease in the internal organs, which it had not been shown in some way, as in this case, had gone through the system.

Mr Comrie Thomson.—Exactly. I take him as adopting the same position as Dr. Littlejohn with reference to the bullock, and acting on the old theory, he says "I would not have condemned this bullock merely on account of what I saw in the lungs or what I was told was in the lungs, but once I am satisfied that the poison has begun to get into the lymphatics, then I condemn it all, although there is no other visible sign." That is the position that he takes up so that what I mean is this, that you have the absolute strictness of prohibition prevailing in Edinburgh, Greenock, and Paisley, and you have the medical officer for Leeds, who was a witness for the respondents here, stating that he would adopt a much stricter practice than that which is prevalent in Glasgow, because the moment he finds any evidence that the virus has begun to be taken up by these disseminating organs then he condemns it all without waiting to see the exhibition of tubercular nodules or any other sign in another part of the carcase. Now, that this branch of scientific inquiry is in a certain sense in its infancy there can be no doubt, although, now-a-days there are many men of the highest talent devoting themselves purely and entirely to scientific research, and with those well-equipped scientific laboratories that are to be found in all large communities, science advances with much more rapid steps

than it has ever done before in the history of the world. Still it is the fact that it is not nine years, or ten years at least, since the specific organism about which we have heard so much was actually discovered; and it is for your Lordship to say whether you think that the body of evidence which we have submitted to you is such as to justify you in adopting the course which we invite you to take. Our case depends, in the first place, upon the theory, or rather, I should say, upon the fact that there is a specific organism which produces tuberculosis; that that organism, although having no vitality in itself, is capable of being disseminated, and in point of fact is disseminated, through all portions of the body by the lymph stream, by the blood stream, and by the wandering cells; and that when any portion of the animal in which any of these organisms exists finds its way into a human being's system, the consequences to him may be of the most serious kind. These are the propositions upon which our case depends. If your Lordship thinks that the preponderance of the evidence in that direction is not sufficient, the result will be that you will pass this carcass of the bullock; if, on the other hand, you think we have made out that these are really well-ascertained facts, as far as scientific facts are susceptible of demonstration, then I ask your Lordship to decide in favour of the Local Authority.

Now, I do not wish to quote evidence at length, and I certainly shall, as far as possible, abstain from doing so, because my learned friend Mr. Ure has referred you really, I think, to all the leading passages which it is necessary for you to consider. I shall confine myself now rather to something of the nature of a reply to the observations of my friend Mr. Jameson, and particularly to the state of the evidence as led by the respondents. They put a goodly number of witnesses into the box. I do not wish to say a word against the learning or honesty or scientific reputation of any of them; but it is a remarkable fact, and one which will be very difficult for your Lordship to get over, that out of the twelve men whom they called they put in two who adopt the theory of the specific organism and the dissemination of it, and they put in ten who will have nothing to say to it. Now, I think I should either have dropped the ten or dropped the two, because it is quite impossible that you can do otherwise than either discard the two—and they are their trump cards, their best men—or you must discard the ten. The first three men they put in were Mr. Pottie, Mr. Allan, and Mr. Boyle, who were, to use an expression which I used before, empirics. They had some practical knowledge, considerable practical knowledge, of animals, dead and alive, and they said quite frankly that they had no opinion upon the subject of the new theory. This matter of bacteria or of specific organisms belonged to a sphere into which they had never soared—or sunk; and accordingly their opinion on the subject is *nil*. Then they put in Mr. Goldie of Leeds, and his evidence is perfectly honest and straightforward. He also tells you that he has no opinion upon the subject. Although he is the medical officer of health of a large

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June 17, 1889. town, he actually says that he will not follow either Koch or Klein; why, he does not say. He has not himself personally made experiments, and he has not been an eye-witness of experiments; but "in the meantime," he says, "I decline to make up my mind on the subject." Well, that don't carry you very far. Then comes a gentleman from London, Dr. Gibbon, who goes a little further. With considerable confidence, he declares that the whole thing is nonsense. He does not say why he does so, but only he chooses to take up the position—which may afford him comfort, I don't know—that, notwithstanding the resolutions that have been arrived at by scientific men here and on the continent during the last eight or nine years, he still considers himself justified in describing it as nonsense. Then we had Dr. Hill from Birmingham, and what he says on page 285, I should like to notice for a moment:—

"4682. You think there would be a risk in using a tuberculous carcase?—Yes.

"4683. What is the risk?—The risk of taking morbid matter into the system.

"4684. Is tuberculous matter dangerous?—I did not examine the carcass for tuberculous matter.

"4685. Do you attach any importance to the cause of the tubercle?—I don't know that the cause is positively made out.

"4686. Do you hold the view that the bacillus is the cause of the tubercle?—I don't know. I have not decided. I do not either accept or reject the view."

Then Dr. Mason, from Hull, on page 290, gave some evidence which I would commend to your Lordship's consideration, because I think that he really granted me in cross-examination almost all that I need for my case. He says—

"4778. Now, why is it that you do not allow tuberculous meat to go into the market when it has gone beyond the mere local stage? What is the thing you are afraid of?—We find when the lungs only are affected, and it is localised there, that it is localised to the lungs, and that the meat of the animal may be taken.

"4779. That is not my question. Why do you keep any meat out of the market when the disease has extended beyond the lungs?—Because it is unfit for human food.

"4780. Why?—Because we find it disseminated through the system.

"4781. And if it is disseminated through the system and is eaten, it will do mischief to the consumer; that is what you apprehend?—Possibly; it has not been proved.

"4782. But you are afraid of that?—Yes." Now there is a man who won't commit himself exactly to this theory, but who acts upon it, because there would be no sense in talking about dissemination in this way unless he thought it was highly probable, to say the least of it, that there was a something, a specific organism to disseminate, and which was capable of dissemination by the flow of the lymph or of the blood. Then we had Mr. Anderson. Mr. Anderson was really amusing, but I

don't think your Lordship can attach any importance whatever to what he said about the pabulum; it was a little too absurd. Of course this bacillus only goes where it expects to find comfort and enjoyment, and accordingly it goes where there is pabulum, where there is provender for it. The passage that was printed, after reflection, by the witness, from Koch, and which he said was to justify his statement about the pabulum, your Lordship will observe was written by Koch so far back as 1884.

Sheriff Berry.—It was a passage from the Veterinary Journal.

Mr. Comrie Thomson.—So it is, from the Veterinary Journal for August, 1884, but it begins by saying "Koch has solved the problem."

Sheriff Berry.—Yes, but it does not say that it is from Koch's writings, although it refers to them.

Mr. Comrie Thomson.—Exactly, that is what I was to say. This is published in the Journal for August, 1884, and it says "Koch has solved the problem." It does not say at what stage of his enquiries he did so, but it was previous to 1884, and therefore previous to those pure cultures which, both in Koch's own view, and in the view of various scientific men, have advanced the question a great deal further than any other experiment that has ever been made. Now, that disposes of the medical officers and other experts who were put in by the Respondents. They put in as a medical gentleman, Dr. Dougald, and he frankly tells you that he has had no experience whatever in anything of this sort, and that on this special subject he knows nothing. He uses the words, "I am an agnostic. I know nothing about it. I have had no experience." Why he was put into the box I am unable to guess. Then comes Dr. Young, and he most honestly, I have no doubt, says that he has paid some attention to this theory, but he does not believe it. Now, just observe the different stages of evidence of these witnesses. You have one of them who says it is nonsense; another who says he does not believe it; and all the others say "we know nothing about it," except one, who says, "from what little I know about it, I act upon it although I am not prepared to accept it as a scientific fact." That is how the matter stands upon the evidence. Then they put into the witness-box Dr. Imlach and Dr. Hime, and these are the two men whom I suppose they rely upon as being scientifically their most eminent witnesses. But these two gentlemen turned their backs upon every other witness whom the respondents have put into the box and say, "What you call nonsense, what you don't believe, what you know nothing about, we adopt." If my friend is obliged to adopt the evidence of his two principal witnesses, as he certainly is, then he is tied down to what is the first and most important step in the theory which I am propounding to your Lordship, namely, the theory of specific organisms, capable of dissemination by the fluids through the body.

Sheriff Berry.—I don't think Mr. Jameson seriously denied that.

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June 17, 1889. *Mr. Comrie Thomson.*—I think not; he was driven to admit it. Now in that case it just comes back to what I said before, in considering the respondent's evidence you will discard ten out of the twelve witnesses. My friends are driven to accept my theory, because Dr. Imlach and Dr. Hime, both of them men who were evidently not very much in love with the theory, accept it frankly; and further, Dr. Imlach, whose evidence is, in my judgment, that of a very thoughtful man, not only accepts the theory, but he takes a further step on page 211, for he admits there that the disease will be propagated by the ingestion of the food. In question 3604 and following questions he accepts the theory of ingestion, and in that way also he must be taken as inconsistent with the other witnesses who maintained, and with the view that was maintained in cross-examination of our witnesses by my learned friend, that although this was communicable by inhalation, it had not been proved to be communicable by ingestion. Dr. Imlach says that it is. You will find also that he says, on p. 223:—

“3815. But assuming that your belief is well founded, and that “the organism is the cause of the tubercle, and that it is capable “of being conveyed through the body, is it not a question of “chance whether it won't be conveyed through the body, add “conveyed through the body to resume its noxious action wher- “ever it finds a congenial soil?—Yes, I think so.”

Now, there is my whole case. My whole points are admitted in that answer of Dr. Imlach's, the germ theory—that it may spread—that it will naturally spread throughout the body, and that wherever it finds a congenial soil to resume its noxious action there it will go. That is all that I maintain. That proves the case of the petitioners. Then, coming to Dr. Hime, well, he was rather a lively witness, but I think one gets this from him, that he also accepts the germ theory,—that he also admits that these germs may be communicated from the lower animals to the human being by ingestion. The references to that are pp. 262 and 239. Then on p. 272 you will find that he admits that milk containing bacilli may be dangerous, and when he is asked to assume that it is infective, I ask him, “I want to know “why we should not anticipate that meat containing bacilli “should also be infective?” and he answers, “The only reason “I know is that the experiments have proved that it is “not.” Now, there you see the doctor is entirely wrong. In the first place, as I have already indicated, *prima facie* one would suppose you would take as much harm from eating the meat of an unsound beast as from drinking its milk, whereas the experiments have proved no such thing. There have been very few bacilli found in blood. There have been very few bacilli found in what is called flesh in the technical sence of the word,—that is, muscle as distinguished from the connective tissues and other portions of the animal, but it is quite a mistake to say that it has been proved that meat containing bacilli would not also be infective. It stands to reason that if they are infective in one substance they are infective in another, it don't

matter in the least what the special mode of conveyance into the human frame may be. Then, your Lordship will look at the evidence he gives—I shall not read it—from p. 269 to p. 272, where you will find that later on he is obliged to modify some of the opinions that he had given in his examination in chief, and particularly he is tied down in question 4440 to the opinion of Dr. Fleming, who is the principal veterinary surgeon of the army, in a book, a quotation from which was put to him. Then, your Lordship will remember this, that notwithstanding his admitting the germ theory, notwithstanding his admitting the disease being communicable by ingestion, notwithstanding his admitting that milk would convey it, and his being able to give no reason why flesh should not convey it, he has the audacity to say in answer to the question, “Then you think there is no danger to be apprehended from the spread of the tubercular organism?” that it was a great bugbear (question 4439). I do not wonder that your Lordship, in question 4443, put the question to him again—“Still, notwithstanding that, you regard what he says is a serious danger as a bugbear?” —Well, I don’t say it is merely a bugbear,” but having had put to him Dr. Fleming’s opinion and Sir Charles Cameron’s opinion in the meantime, he having described what they considered a serious danger to the public as a great bugbear, he does modify that expression to some extent, and he is somewhat of the opinion of these two eminent men. Then, Dr. Hime has the good sense and frankness at the end to admit that he approves of the French decree. Now, the French decree just stops a very little short of what we are asking here. The French decree might just be a course of action that your Lordship might think sufficient to satisfy the interests of the public here.

Sheriff Berry.—I have no authority to say what the authorities here shall do; I have simply to deal with these specific cases.

Mr. Comrie Thomson.—Quite true; but what I mean is this, that the French decree which Dr. Hime approves of would include both these cases; it would include both the cow and the bullock, because in both cases, as the third article of the decree specifies——

Mr. M’Kechnie.—It affects the membranes; that is what it says.

Mr. Comrie Thomson.—It is more than that. “If the lesions, though localised, have invaded the greater part of an organ, or are manifested by an eruption on the walls of the chest or of the abdominal cavity.” In both of these animals, both the cow and the bullock, the greater part of the organs, the lungs and the pleura, have been invaded, and in both of them there was a manifestation of the disease on the cavity of the chest or the walls of the chest. Now, how can my friends set up their face as against the evidence of their own witnesses. The only witnesses whom they put in accept the germ theory, accept the ingestion, accept the communicability of the disease, accept the soundness of the French decree. I said a little ago I was willing to peril my case on a quotation I made from Dr.

June 17, 1889. Littlejohn. I am willing now to peril my case on the statements made by Dr. Hime. They give me all that we ask, and they are sufficient to justify your Lordship in condemning the animals now in question. That is how the respondents' case stands. It stands upon the evidence of two witnesses who admit almost, if not all, that the prosecution ask. Against that you have—I am not going over the evidence even by way of reference—you have the three medical officers of Glasgow, and it is very important to notice that Dr. Russell, who deservedly stands so high in this town, and who has been charged for so many years with the superintendence of the sanitary condition of Glasgow and its inhabitants, is taking what must be the unpopular course with many people, of declaring that the result of his reading and investigation and inquiry has been to drive him to hold this opinion, and upon his responsibility as the health officer of this great city he comes forward and says to your Lordship “This system is bad and is dangerous, and it must be put a stop to.” In this he is backed up by the experience of some years of Dr. Littlejohn, a recent and reluctant convert, and by the experience of a very accomplished young man, Mr. Robinson, and Dr. Wallace, and, I think, Mr. M'Geoch, whom my friend described as——

Mr. Jameson.—As a most illiterate man, as shown by his own certificate. He cannot even spell.

Mr. Comrie Thomson.—I don't know that even my learned friend could spell all the scientific words we have been using; I am sure he could not pronounce them all. Now, these are the witnesses we have for the prosecution. We have the medical officers for Glasgow, Edinburgh, and Greenock; we have two inspectors for the Local Authority, and these are microscopists, who have used the microscope in connection with this matter. We have four veterinary pathologists, and we have two very distinguished bacteriologists and histologists—namely, Mr. Maylard and Dr. Joseph Coats. Now, I am not here to sound the trumpet of our witnesses, but I ask your Lordship whether, knowing as you do about these matters, we have not put into the box just the best men in the country in the veterinary and pathological science? I have no occasion to discredit the witnesses who were put into the box by the respondents, because the only two of them who are of any use to them support my case; but I have put the best available talent that this country produces into the box, and their opinions support the theory upon which this prosecution is founded. Now, I think it would be a very strong thing, it would be incurring a very great amount of responsibility if your Lordship were, at the instance of my learned friends, to disregard the consensus of opinion which you got from the box at the mouth of the prosecutor's witnesses. They are men who have no interest to serve in this matter, except the interests of science and of public sanitation; they are absolutely above suspicion; and they are all practical men, not men who have been accused of entertaining absurd notions, or arriving at

rash and rapid conclusions,—they are practical as well as scientific men, and they risk their reputation as men of ability men who are capable of conducting inquiries, men who are fit to judge of the evidence which is borne in upon them upon such a subject, by supporting the opinion which I invite your Lordship to give effect to, and to adopt. It is quite true that there has been in this, as in other branches of science, progress. The question is maturing. People speak to-day probably with more confidence than they could speak at this time perhaps twelve months ago; and it is a very important feature in the case that the advance of human knowledge in this matter has been greatly accelerated, just about twelve months ago, by the two matters which have been referred to so frequently in the course of this trial. The Congress in Paris was the first of them. My learned friend Mr. Jameson sneered at the congress in Paris. The congress in Paris consisted not of mere worshippers of the bacillus, as my learned friend represented to your Lordship; but, so far as I can judge from the introductory page of the report, it consisted of a number of the most distinguished persons in France. The President is M. Chauveau, of whom we have heard a good deal; then comes the vice-president of the Society of Practical Veterinary Medicine; then comes the director of the Veterinary School at Alfort, which is the principal veterinary school in Paris; then comes the secretary-general of the School of Practical Veterinary Medicine; then come four gentlemen who are professors in the Faculty of Medicine in Paris, their secretary is the reporter of the Faculty of Medicine; and then comes this, “There shall be members of the congress all doctors of medicine and all veterinary surgeons, French or foreign, who shall subscribe their names in time, and pay the subscription.” So that, instead of a collection of people who were deifying the bacillus, and were to elevate it upon a pedestal upon which it might be duly worshipped (to quote my learned friend’s words), you have a congress of all the most distinguished in France, met for a period of two or three days, for the consideration of what was the stage at which scientific knowledge had arrived, so that practical effect might be given to it. I rather think, too, that we were under some misapprehension in saying that the report of that congress led to the legislation of the French Government. Judging from the dates, I think the French Government must have been already advised, and had anticipated the result of this congress, because the decree is promulgated within a few days of the close of the congress. It is promulgated on the 28th of July, which indicates to me that probably the veterinary and scientific advisers of the French Government had already made up their minds as to the proper course to follow, independently of the resolution of this congress.

Sheriff Berry.—What is the date of the resolution?

Mr. Comrie Thomson.—It was some day in July.

Sheriff Berry.—It was in the same month?

Mr. Comrie Thomson.—It was in the same month certainly. Of course, one does not know for certain, but the congress sat

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June 17, from the 25th to the 31st of July, and this decree is promulgated
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Mr Comrie *Sheriff Berry*.—So that it was promulgated while the congress
Thomson. was sitting?

Mr. Comrie Thomson.—Yes; the 31st was the date of the resolution, so that it must have followed on the promulgation of the decree by the French Government, showing that, apart altogether from this congress, the Government had been advised, and one may be quite sure that in such a matter they proceeded after due consideration and with prudence, and with all the economic results of such a decree before them; and they did the very thing, or almost the very thing, that the congress reported in favour of. Then you have—and it cannot be ignored—you have a most deliberate and anxious injury by our own Government into this matter. Nearly one-half of the blue book consists of evidence with regard to tuberculosis, and you have there the names of some of the most distinguished men in England in the list of the witnesses, such men as Mr. Lingard and Sir Charles Cameron; a number of officers of health like Dr. Littlejohn and Dr. Walley; and a great many other people who have practical knowledge examined from day to day, at the instance of a body of practical men—Dr. Brown, one of the Commission, who is at the head of the medical department of the Privy Council; Victor Horsley, who is one of the best known Fellows of the Royal Society, a man of great eminence; and you have such practical men as Mr. Stirling of Kippendavie; and others equally well known in the agricultural world; and having every fact before them that could be gathered, and independently of that French Congress and the evidence which was led before it, they arrived at the same conclusion. My friend challenged me to point to any evidence which would justify the conclusion. Well, that was rather a bold challenge. The members of the tribunal, the gentlemen who constituted the committee, made their finding presumably upon evidence, but I am not in the least afraid to accept the challenge, and I can refer my learned friend to the evidence of Sir Charles Cameron, p. 252 of the minutes of evidence before the Privy Council Committee:—

“7939. Then it is quite your opinion that all the flesh of all
“tubercular animals should be destroyed?—Yes, no matter in
“what condition they ought to be destroyed; I must say that, be
“the condition satisfactory or otherwise, I unhesitatingly con-
“demned any animal that had tuberculosis in any part of it.”
Now, that is evidence I should imagine that goes to support the conclusion at which the Commission arrived: it is that of Sir Charles Cameron, who is probably the most distinguished professor of hygiene, certainly the most distinguished professor of hygiene in Scotland, and one of the most distinguished men in hygiene and the chemistry connected with hygiene in the United Kingdom. In the same way you will find that Mr. Lingard says on p. 256 of the minutes of evidence before the Privy Council Committee:—

"8039. So that actually the tissues of an animal would be June 17,
"infective at a period when it could not be recognised by the 1889.
"naked eye?—Yes it would."

"8040. With respect to the employment of meat from animals Mr Comrie
"diseased from tubercle, I suppose you would insist that all Thomson.
"meat from tuberculous animals should be destroyed?—Un-
"doubtedly I should.

"8041. I mean to say, whether you could see anything in the
"parts used for food or not?—Whether I could see anything or
"not.

"8042. I believe you also found that muscles which where
"not near any focus of the disease were free from the bacilli?—
"Yes, quite free.

"8043. In reference to the risk, would you consider, from a
"practical point of view as to the public health, that it would be
"too great?—It would be too great to allow it."

Now, that is, I think, quite a sufficient answer to my learned
friend's challenge to point to any evidence justifying the con-
clusion at which the committee arrived.

I think, my Lord, these observations really conclude all that
I can usefully say to your Lordship on the subject. As I said
before, my learned friend Mr. Ure really exhausted the case
upon the facts, and I have really only ventured to empha-
sise two points. It is no answer surely to this prosecution
that the public health is improving. Let us all be thankful that
it is so, but I think the reason for the improvement is not very
far to seek. Within the last 25 or 30 years there has been a
most extraordinary revolution in the way in which both private
individuals and communities pay attention to the laws of health.
There is no doubt that life is longer to-day than it was 25 years
ago, and what with temperance, and what with good drainage,
and the general prosperity of the country enabling people to live
comfortably and to feed well, there is no wonder that health has
improved, no wonder even that such diseases as are allied to
tuberculosis—consumption, phthisis, and so on—have diminished;
but that is no answer surely to an attempt to take another step
exactly in the same direction. This is just another step, and a
very important step it is. It is proved that not only is tuber-
culous disorder the cause of death, but even where it falls short
of death, it is proved to be the cause of much suffering and
weakness and general ill-health, and it is even proved to be the
parent not unfrequently of nervous and mental diseases. I am
sure your Lordship will be glad if you can see your way to pro-
nounce a judgment that will do something to diminish the risk
of such a scourge as this prevailing longer in this community,
and I ask your Lordship for a conviction.

Mr. M'Kechnie.—My Lord, you are sitting here under a Mr.
statute, dealing with what is purely a matter of police. M'Kechnie.

Sheriff Berry.—Under the Public Health Act.

Mr. M'Kechnie.—Yes, and therefore I call it a police statute.
I do not mean the Glasgow police statute, but it is a police

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statute: and the question which I shall first argue to your Lordship is whether, in the proved state of the facts, that statute applies, or whether your Lordship is entitled to convict upon the evidence as under that statute. My argument is not upon relevancy, nor is it an objection to jurisdiction. It is whether the statute applies, now that the facts are known. Now, nothing could better illustrate the case for the prosecution than my learned friend's observations. His case goes to this:—There is injury to health to be apprehended; there is insanity to be apprehended; there is paralysis to be apprehended. In short, he puts it very well to his witness at p. 25, "So that your evidence upon this point comes to this, that it is impossible, from mere statistics of death arising from general recognition from tubercular origin, to estimate the total amount of loss of human life that arises from it?—That is so, and, short of loss of human life, the vast amount of loss of health, of loss of limb that is distinctly traceable to this tubercular virus." In an earlier question he puts this in, that nervous diseases, even amounting to insanity, arise from this tubercular process in the nervous system, and similarly with other diseases, the symptoms of which are derangement of function in the various organs (question 504). Therefore the inquiry before your Lordship is the widest possible in scope, and I am not at all surprised that my learned friend has called in so much science to his aid. He says that science moves now so rapidly that scientific men may change or revise their opinions almost monthly. The Poet Laureate thinks it moves

Slowly, slowly, creeping on from point to point.

Mr. Comrie Thomson.—He said that more than twenty-five years ago.

Mr. M'Kechnie.—He said that more than twenty-five years ago. The point I am going to maintain is that this statute does not apply to the condition of matters you have here, and that neither your Lordship nor any other magistrate has jurisdiction to enforce the statute against any of her Majesty's subjects in this way. A great statesman, in the autumn of 1866, made a speech at Manchester; in 1867 the Public Health Act was passed—that is twenty-two years ago. The Public Health Act did nothing except give powers to do what was competent under the common law of Scotland long before that Act was passed. It was the common law of every civilised country in Europe that flesh unfit for human food should not be supplied to any customer. I don't know what the penalty was; it might only be rescission of the contract; it certainly could lead to an action of damages. Now, I ask your Lordship to look at section 26 of this statute. It is a section giving powers. "The sanitary inspector may at all times enter any premises to inspect and examine any carcase, meat, poultry, game, flesh, fish," and so on, "exposed for sale, or to be exposed for sale, and in case any such carcase, meat," and so on, "appear to him to be unfit for such food, the same may be seized without any warrant."

Now, that is merely a conferring of power upon an officer of police. Then it is to be brought before the Sheriff, and he is, by a writing under his hand, without any process of law whatever, to condemn it, the writing being granted after he has formed his opinion. Then there are clauses going further, and conferring upon the magistrates power to impose certain penalties. Now, the emphatic words are that the thing to be seized is flesh that, in the opinion of the sanitary inspector, who is not necessarily a man of skill at all, is unfit for human food. A justice of the peace or any two magistrates or justices may, by writing under their hand, condemn the thing so seized. Now, "unfit for human food" surely does not include and extend to a thing that may produce insanity in subsequent generations; that may produce carius of the bones years afterwards in a person partaking of it accidentally, or may produce paralysis when a man becomes old who was strong and healthy when he took it. That was never intended by the statute; it never could have meant that. What was meant was a thing so manifestly unfit for human food that it was either not nutritious or detrimental to health, or even poisonous. That was the kind of thing that was to be seized and instantly dealt with. It is indeed somewhat difficult to explain the words of a statute, especially when there are no cases upon it; but your Lordship will not forget this consideration, that Koch's bacillus was not discovered until 1881, and therefore this view of the matter could not have been considered by the Legislature in 1867. Our common law is sufficiently elastic to extend to newly-discovered crimes; and accordingly your Lordship has such cases as those of Allan and others, which could not be punished by the criminal law of England, brought down here because under the the common law of Scotland we are able to punish even innominate offences wherever we find moral crime and guilt. But the statute law of the country cannot be extended. Your Lordship has no power to add a new term to any statute. Now, this statute, and similar laws to which I shall refer, have been in active operation in the three kingdoms for twenty-two years, and it has never occurred to any person until the 26th of April last, when it dawned upon the much-bepraised public officer of health for Glasgow, that this statute could be turned to the new use to which it is here being applied. It is very extraordinary that even Dr. Russell himself admits that he knew nothing about the matter before then, for he says at question 702, p. 41—"Have you any knowledge of this disease beyond what you have got in the report of this congress and this departmental report?—None whatever." This is the much belauded gentleman—and I say not a word against him—who takes this new departure, and leads to this highly interesting scientific inquiry, over which your Lordship has presided for so many days. Now, there is no better interpretation of statutes than inveterate contemporaneous use and application,—no man saying the contrary, and it occurring to no person that this statute could be enforced to the effect of making valid this new

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departure. It did not require the Public Health Act at all in this case, except for this reason, that your Lordship was asked to preside; and I am sure, if I may be allowed to say so, that the public are very glad that your Lordship has taken this course, because we find that the magistrates have power under their own statute, the Police Act, to deal with such cases. I am taking no exception to their not having done so; but I am going to ask your Lordship to compare the Public Health Act on this subject with this Police Statute dealing with the very same subject, and passed, I think, the year before—in 1866. In section 271 you will find the best possible exposition of what the meaning of the words “unfit for human food” is. The language is just the same—“Any animal, or fruit, or “vegetable, or fish which is unsound, or unwholesome, or unfit “for human food.” Now, I ask your Lordship to read that in this way,—“which is unsound or unwholesome, and unfit for “human food,” and therefore unfit for human food because of its unsoundness or unwholesomeness; and it is a remarkable thing that I find in the English Public Health Act 38 & 39 Vict., ch. 55, sec. 117, the very same collocation of words, “game, fish, flesh, “vegetables, fruit, flour and milk, so seized as diseased or un- “sound and unwholesome or unfit for the food of man.”

Sheriff Berry.—That is not subsequent to the Scotch Act.

Mr. M'Kechnie.—That is in 1865, but they had similar clauses earlier. I think we had in the Food and Drugs Acts the same words before 1867, but it rather went to adulteration.

Sheriff Berry.—Does the word “diseased” occur in the Glasgow Act?

Mr. M'Kechnie.—No; in the Glasgow Police Act it does not.

Sheriff Berry.—It is in the English Act?

Mr. M'Kechnie.—It is in the English Act only, “diseased, or “unsound, or unwholesome, or unfit for the food of man.” Now, it is a very remarkable thing that an English judge should have considered this was so plain and obvious and simple a matter that he thought the flesher, the owner of the carcase, could not be heard at all upon the question of unsoundness. You will find that in the case of *Vintner v. Hind*, 10 Q.B.D., L.R. 63.

Sheriff Berry.—In what year was that?

Mr. M'Kechnie.—1882. Mr. Justice Stephen, commenting on the English statutes, divides the procedure into two stages, the seizure and the condemnation, and his opinion was that the two things were such simple processes, the police officer or sanitary officer to seize, and the magistrate to condemn, that the flesher was not even to be heard upon the unsoundness, and therefore he says that he could not be heard on the discretion of the justice, and that is to be taken to be conclusive. If the person summoned could only dispute the seizure and the exposure for sale, and could not dispute the unsoundness, that is a strong ground to support our construction of the Act. Now, the opinion was unsound, and was so found in a subsequent case to which I am going to refer; but the mere fact that a lawyer of the supposed eminence of Mr. Justice Stephen could have come to

that conclusion strongly aids me in my argument that this is simply a police statute, and that you are dealing with matters which the human eye can see and which the human nose can feel, and you are not dealing with matters of remoteness at all. You are dealing with unsound and unwholesome meat. The case was purely technical upon other grounds; but in this case which I am to refer your Lordship to now, *Waye v. Thompson* —

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Mr. Ure.—What is the reference to the decision of the Appeal Court reversing Mr. Justice Stephen's decision?

Mr. M'Kechnie.—There is no decision is the Appeal Court at all. It is an observation in a subsequent case, reported in 15 Q.B.D. 342. I quote it for the two purposes—of commenting upon Mr. Justice Stephen's opinion in *Vintner v. Hind*, and also for a statement by Mr. Justice Matthew as to the meaning of the clause in the English statute. Your Lordship will remember that it contains a collocation of words. His Lordship says, "The object of the section was to prevent the sale of meat unfit for human food, and the Legislature secured that by rendering the exposure of unwholesome meat for sale the subject of a criminal charge." Now, his Lordship simply uses the word "unfit;" he groups all the words under the heading "unfit;" and then he says, "what the Legislature intended to prevent was the exposure of unwholesome meat for sale"; and that is what has become the subject of the police statutes. It is there that the police come in to aid the public from being deceived. In a ruder state of society, and if people were grouped in small communities, they would leave this to the operation of the common law; but because you have people living in large towns, where numbers of people must be protected from partaking of unwholesome meat, this police regulation comes into force. But how do my learned friends who appear for the prosecution propose to bring their case within the meaning of the law as I have now explained it? They do not say that this food is not nutritious; there is no suggestion of the kind. They do not say that it causes vomiting or purging, or that it is poisonous. Can they maintain that, with all their experience in Glasgow and in Edinburgh, there have been cases of vomiting or purging from partaking of the food of such animals as your Lordship has before you here? If there had been such cases they would have got evidence of them. If the food was at the time when partaken of fit for human food, then that statute does not apply. But then they say, "But there is a terrible disease, a scourge to humanity, called tuberculosis; it affects the bones, it causes insanity, it leads to paralysis, it is a highly infectious disease, and it is also a contagious disease; and you are supplying a food which may possibly by infection or contagion lead to risk to human life." In other words, they are not protecting the purchaser of any particular carcase or piece of food; they are using the Public Health Act for the protection of humanity at large. Now, I am perfectly certain that the Legislature of this country never intended that

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two justices of the peace, sitting under a Police Act, should decide a question of that sort, or that a couple of bailies in a country town should, by a writing under their hand, settle a question of so much importance. Questions of that sort are wisely reserved by the Legislature for themselves. Whenever it is a question that goes to a general principle of economics the Legislature will not part with the disposal of that question, except upon a distinct contract with the judicial body; they will hand it over to them under an Act of Parliament. Now, why is that not done here?

Sheriff Berry.—Is it under the Police Act, any special Police Act, that Edinburgh does this, or is it under the Public Health Act that they assume authority to condemn these carcasses?—Perhaps you cannot tell me.

Mr. M'Kechnie.—I cannot.

Mr. Ure.—It is under the Public Health Act in all the three towns that were mentioned.

Mr. M'Kechnie.—There are only three towns in Scotland that do this. I believe there is a fourth one not in evidence—the town of Falkirk—but it is their poverty and not their will that consents. It has caused the fleshers of Glasgow to expend a great deal of money to defend this case.

Sheriff Berry.—I mean there has been no decision on the point?

Mr. M'Kechnie.—No. Now, we are in this position, that my learned friend points to a great body of opinion in his favour. We had a flourish of trumpets all through this case about a French Congress that led to the French decree. That Congress did not lead to the French decree, because the French statute is earlier in date than the French Congress, and I suppose the resolution of the Congress was merely the adoption of the Act of Parliament after all.

Sheriff Berry.—The resolution of the Congress went further——

Mr. M'Kechnie.—It went further—at all events, they agreed with the Act of Parliament so far: but my learned friend cannot represent the one as the consequence of the other. The French Legislature did not defer to the opinion of the Congress in the slightest, but performed a sovereign Act: they passed an Act of Parliament under which, on certain conditions, animals should be seized if they are tuberculous, and owners are to get compensation. Your Lordship has the German law also quoted in question 4413. It appears that in Germany they passed a law on this subject in 1885, and that is confirmed by a law passed in 1887. Now, I cannot for a moment doubt that these two highly civilised countries had the same common law on the subject as we had, and I cannot for a moment doubt that prior to the dates of these statutes they had police regulations also; but they did not attempt, as the Local Authority of Glasgow attempts, to stretch the law, and thereby fine individuals under a statute never meant to apply to them. No; they passed statutes which are fair and equitable, and which, even if not fair and equitable, they must be obeyed. Now, this is not too large a question for your Lordship

to decide; I do not suggest that for a single moment: but it is too large a question to be decided in the form in which it must be decided in this country, by the ordinary magistrates in their ordinary courts, because we cannot get Sheriffs to sit and hear questions of this kind all over the country. I therefore again repeat that the facts proved here do not bring us within the statute. The statute was not intended to prevent the spread of contagious diseases—we have special statutes for that; the statute was not intended to prevent infection; the statute was not passed for the protection of generations yet unborn,—in their bones and their brains and their sinews. The statute was intended simply to protect a man from getting a poisonous dinner provided for him, and for nothing else. We get some light on this matter from the procedure of the magistrates in Glasgow, under section 101 of their Police Act, subsections 2 and 3. The way that carcasses which are thought to be unfit for human food are to be dealt with is that they are to be inspected by the chief constable or superintendent, or other person, along with two respectable dealers in such article, and then if the two respectable dealers agree with the chief constable or whatever superior officer may have condemned the animals, then the carcasses are to be buried or otherwise disposed of. Now, I do not desire to elaborate this matter upon the statute, but I submit it to your Lordship very strongly, because I think it is the correct view of it. Questions of this kind are not to be solved by applying the sledge hammer to them. Sir William Stirling-Maxwell's Trustees tried to interdict the Burgh of Kirkintilloch from discharging water into a burn surrounding the burgh. Well, they were entitled to interdict, because there was no title and no use, at least no use for forty years, but the court declined to enforce the interdict, because they could not stop human life in the burgh until an Act of Parliament in the form of a provisional order was got to compel Stirling-Maxwell's Trustees to give land upon which the sewage of Kirkintilloch might be utilised, and possibly the best cabbages in Glasgow come from that quarter. That shows your Lordship the view which the Supreme Court would take of a question of this kind. They would not interfere with a whole trade. They would not stop life in Kirkintilloch; one of their Lordships used the very words, "I am not going to stop the life of this burgh by interdict. I must allow reasonable time for accommodation and for convenience, and when the Act of Parliament is got, if they do not proceed then to utilise the sewage in any way, I shall grant interdict." Now, where is the compelling necessity in this case for your Lordship to put the trade of the fleshers in Glasgow to this inconvenience? I really do represent it as a very serious matter for the whole country. You have American meat coming in; you have fowls and fish coming in; you have meat from the country coming in; and there is no power of seizure at all except of what passes through the Glasgow slaughter-house. All that shows that this Act was really not intended for any other purpose than what I have stated.

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Sheriff Berry.—Do you say they can kill the meat outside and bring it in?

Mr. M'Kechnie.—Yes. To evade this matter, if a flesher suspected that an animal was in the least diseased, he could send him outside, kill him there, and bring him in,—viscerate him and send in the sides—and there you are, and the public health is not in the least advanced.

Mr. Jameson.—The American beef may be done in that way.

Mr. Ure.—That is a very different thing, because there is evidence that no beast from America is tuberculosed.

Sheriff Berry.—Is there anything in the Glasgow Police Act to prevent animals being slaughtered out in the country and then sent in in a slaughtered condition, in which condition there would be no inspection of them whatever?

Mr. M'Kechnie.—No, there is no provision for inspecting them under the Glasgow Police statute. Another consideration is that it is undoubtedly the law that a man who buys an animal and pays for it cannot get back the price, even although the animal is diseased, unless the seller is guilty of fraud. Now, in these cases,—and it is a case I don't defend,—unless the animal is emaciated the disease cannot be seen, and the flesher loses the whole value. Then my friend Mr. Thomson dealt with the question of percentages. He dealt with that matter as it stands now, but if your Lordship is to condemn this bullock the percentage will be very different. This bullock and this cow would never have been entered in the books from which the percentages are made up, because the officers, Beresford and M'Lellan, both say they would have passed them, and they would not have gone into the account at all. There is no doubt about their saying that.

Sheriff Berry.—I rather read it the other way.

Mr. M'Kechnie.—I was going to refer your Lordship to that in another connection.

Sheriff Berry.—My impression was that whatever the percentage was it included both the animals that were passed and those that were rejected.

Mr. M'Kechnie.—No; all the carcasses seized as affected with tuberculosis, were said to be from 4 to 5 per cent.

Mr. Ure.—No; 4 to 5 in the thousand; that is $\frac{1}{2}$ per cent.

Mr. M'Kechnie.—Mr. Thomson's statement is quite correct, assuming you enter all animals affected, but then if your Lordship's judgment is to be against me in the matter of this bullock, then every animal that has a speck upon it or on one of its membranes in the slaughter-house of Glasgow will be seized, and I am told there is hardly an animal slaughtered that has not some of its organs affected in some sort of way. Professor M'Call says so in his evidence, so that it really becomes a very serious matter.

Sheriff Berry.—I took the $\frac{1}{2}$ per cent. or 4 to 5 in the thousand as representing the total number of animals that were at all unmarketable.

Mr. Ure.—Your Lordship asked the question of the witness

M'Lellan at page 11, question 221, "Do you mean five condemned in a thousand?—No, affected."

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Sheriff Berry.—It struck me at the time, and I intended to put it clearly.

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Mr. M'Kechnie.—He says "No, affected." He means affected to this extent, that it would enter his book, but *non constat* that the bullock would never enter his book at all.

Mr. Ure.—The next question makes that clear.

Sheriff Berry.—Attention was called by Couper or by some of his people to this animal.

Mr. M'Kechnie.—Yes; they did so in terms of the instructions they had received, but really that is a matter of degree.

Mr. Ure.—Question 222 brings out the point your Lordship refers to. What he means is this,—affected cases.

Sheriff Berry.—Question 223 is, "Was that because half of them were affected generally with tuberculosis and the others only locally?—Yes, perhaps in their lungs, and the carcasses not at all touched."

Mr. M'Kechnie.—But in the case of this animal the opinion of this man was that the bullock had not tuberculosis at all, and therefore would not enter his book. I think he says that in answer to a question which I put to him:—

"242. Would you have condemned the bullock at all or thought of seizing the bullock but for the special instructions of 26th April?—No. It was a good bullock, and very little wrong with it." So that my point is that an animal like this animal would never have entered the record. The cow, I think, certainly would have entered the record, but I don't think the bullock would ever have entered the record at all. However, that is a consideration which does not go deeply into this case. Now, my learned friend founds largely, in speaking of the progress of science upon this point, upon the report of the Commissioners of 1888. But I submit to your Lordship—and I think your Lordship has the report before you—that this question was never referred by the Privy Council to these gentlemen at all. They were to report upon the nature and extent of pleuro-pneumonia and the effects of inoculation, and they were also to enquire into the nature and extent of tuberculosis in the United Kingdom and the means to be adopted to arrest its progress. That enquiry was simply directed to this: What, gentlemen, do you recommend as the best means for the protection of the herds of this country from this scourge which destroys so many of them; and accordingly we do not find the committee of the Privy Council composed of gentlemen qualified to deal with pathological questions. There is not a single pathologist in the whole Commission. We have a distinguished veterinary surgeon, we have a distinguished chemist, and the rest of them so far as I know—two of them were Scotchmen—were gentlemen interested in the rearing and breeding of cattle, and therefore were qualified to deal with the question submitted to them, and to enquire into the nature and extent of the disease, and the means to be adopted to arrest its progress. But because this

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question was in the air, and was being discussed in France, and the minds of men like Dr. Littlejohn and Dr. Russell and Professor M'Call were full of it, some things slipped into the Commission about it, and accordingly you have gentlemen like Mr. Stirling of Kippendavie, coming to scientific conclusions such as you find in paragraphs 41 and 46 of the report.

Sheriff Berry.—Do you admit this, that with the view of arresting the progress of the disease in the lower animals, it is desirable to arrest it in human beings?

Mr. M'Kechnie.—Surely.

Sheriff Berry.—Is not that one of the means of arresting its progress?

Mr. M'Kechnie.—But I don't think the question of its transmission by contagion or infection from the lower animals to man was remitted to the committee.

Sheriff Berry.—I think it must have been so.

Mr. M'Kechnie.—I think I shall prove immediately to your Lordship that it was not.

Sheriff Berry.—However, I don't think that is of any importance; but I think it was so closely allied to the subject of the inquiry that I don't see how they could have avoided dealing with it.

Mr. M'Kechnie.—What I say is that these gentlemen were not qualified to give an opinion upon it. I mentioned the name of one gentleman, and there were others on the committee who were equally well qualified to give an opinion upon questions with regard to the breeding and rearing of stock, but the idea of remitting a pathological question to a few English squires and a couple of Scotch lairds seems to me to be absurd, and therefore I say that the conclusions come to were unwarranted by the evidence. And what is the result of their inquiry? It is no wonder that the gentlemen examined before them suggested, even to these Commissioners, that there should be a commission appointed to inquire into the question now before your Lordship. I shall give your Lordship a reference to that immediately. Your Lordship will find this in Dr. Littlejohn's evidence:—

"7669. Are you prepared to advise this committee as to the nature and extent and method of carrying out these experiments, and the cost?—As I have said, I think experiments should be made with the flesh of animals affected with tuberculosis, to make out really how much the muscular tissue which we eat is or is not affected with this disease.

"7670. That would be a very simple thing, I should think?—
"That would be a very simple thing, indeed."

Then Dr. Peel Ritchie, at question 7542, and Professor M'Call, at question 3260 of the print in this case, suggest the propriety of experimenting with the flesh of such animals with a view to its being ascertained scientifically whether the disease could be conveyed in that way from the lower animals to man. Now, the flesh to be experimented on, your Lordship will observe, was the flesh of an animal that was suffering internally from localised tuberculosis; and if that had been done in this case, by experi-

ment or otherwise—and it was a very simple matter to do it—your Lordship would have had before you evidence upon which you could proceed. What is to be said of the Local Authority of Glasgow when all the evidence they bring forward is that of experiments that have been made with the juices of tubercles, with parts of the tubercles? That is the very essence of the matter conveyed into the peritoneum of the animals operated upon; but not one single experiment has been made with a view to this prosecution, or otherwise, with the very flesh which is in question. So much, therefore, for the state of opinion in this country upon the matter. I find that Professor M'Call himself says, in a passage that was read to your Lordship at the proof, that he desiderates further information, and a committee of scientific men competent to deal with the matter as to what constitutes unwholesome and unsaleable meat. Now, the prosecution here undoubtedly had the means of placing it beyond all question. If the ingestion of such food is dangerous to man, they could have proved it,—that is to say, if it is a matter that could be ascertained within reasonable time. But as it is, they have not brought forward such evidence just because no man has ever suffered from this cause. There is a most remarkable concensus of opinion that from the human stomach to the human lung no bacillus has ever passed, so far as known to man. Take the whole course of the alimentary track, from its beginning to its end, no scientific man can say that a bacillus has ever passed into the human lungs or into the human bones, or that tuberculosis has been communicated in that way. Dr. Littlejohn, who is a recent convert, and has all the enthusiasm of recent converts, was very frank about that. He said “I cannot prove it legally, but I can prove it.” Well, if he cannot prove it legally, he cannot ask 'a conviction legally. If it cannot be proved according to the law of Scotland that such a thing has happened, is your Lordship to convict in this case on the bare possibility that such a thing might happen? Doctors may be apprehensive that such a thing might happen, but your Lordship is surely not to convict two dealers, in two given cases, because there is a scientific possibility that what has never happened in this world hitherto may happen some day, or might have happened.

Sheriff Berry.—That what has never been proved to have happened.

Mr. M'Kechnie.—Has never been proved to have happened. All things are possible; but when we get into the region of faith, although there may be a concensus of opinion on the part of scientific men, your Lordship will not be entitled, I submit, to convict upon such evidence. My friend referred to the law of gravitation. We know the state of science, and the state of opinion, and the strong concensus of opinion there was when the philosopher said the earth moved. We know what followed upon that; they said the earth did not move; but yet the earth was moving all the time; and I submit to your Lordship that in the present state of matters, when the thing has not been

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demonstrated, there would be great danger in convicting on such evidence. Now, I don't think I shall detain your Lordship by anything further in the way of general considerations in this case. I submit that we are in this position, that I am entitled to call upon my friend to do what I am often called upon from the other side of this table to do myself,—I am entitled to ask them to prove their case. My friend said in his most grandiloquent tones that the preponderance of evidence is on his side. It is not a question of the preponderance of evidence; it is a question of whether he has proved to your Lordship's satisfaction that the partaking of the meat of Mr. Couper's bullock would be injurious to man in the sense which I have explained when I was speaking of the law on this matter. I was not bound to bring any evidence at all. He may point to any conflict he likes in my evidence; I was not bound to say one single word. His duty was to prove it.

Now, there has been a good deal said about the bullock. I shall refer your Lordship to some passages in the evidence. I shall not read any of them; but I may refer you to some passages as to the general condition of the bullock. Upon that point your Lordship has the evidence of Mr. Couper.

Sheriff Berry.—There is no doubt that the animal was a prime animal, so far as appearances went.

Mr. M'Kechmie.—After that expression of opinion I need not give your Lordship any references upon that part of the case. Then, as to whether there was tuberculosis or not, I have made an analysis of the evidence on both sides, with the dates when this animal was seen. Your Lordship will remember that in the course of the proof which I led I brought forward people who examined the carcass before and after the witnesses for the prosecution who said they saw the nodules, and who were in a position to say that they were not there, that they had not been removed, and that they had applied their minds to the subject. They could not all have been removed, because if you are to believe Mr. Fyfe—who also strikes one as a sanitary inspector who knows nothing about this subject—I am not blaming him, because his services were only called in for the first time in April last—he says, at p. 8:—

“156. How many (nodules) were there?—They were countless. “The last time I saw them they were there—on 17th May.”

So that whatever Mr. Fyfe saw, and in respect of which he condemned the animal, they were there on the 17th of May. Now, this animal was seized upon the 8th of May, condemned on the 9th, and sent to Yorkhill on the 11th. Your Lordship will see from the dates that my witnesses must have been in a position to see the nodules, because according to Mr. Fyfe they were there on the 17th of May. Now, take Dr. Goldie and Dr. Imlach and Dr. Hime.

Sheriff Berry.—They saw the carcasses on the 16th.

Mr. M'Kechmie.—Yes, they saw them on the 16th, and these gentlemen swear most positively that the nodules were not there. I shall give your Lordship the references to their evidence.

Sheriff Berry.—I have got them all. Of course they are the principal medical witnesses, but I think Mr. Anderson or someone saw the carcasses on the 9th or 10th.

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Mr. M'Kechnie.—I am to give your Lordship a reference to Dr. Young's evidence, who was there with Professor M'Call and Dr. Russell, and he is a witness above all suspicion, because he is the selected officer of the Corporation; he is in their own employment, set up in high office by them, and he said at question 5236 that he saw the animal on the 8th or 9th, probably on both days, and he saw no tubercles on that day. They were not there, and yet Mr. Fyfe says they were countless.

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Mr. Ure.—That was nodules.

Sheriff Berry.—Dr. Young says "I could not see any tubercles."

Mr. Ure.—Yes.

Sheriff Berry.—What Mr. Fyfe says is that there were small nodules. Is there any difference between a nodule and a tubercle?

Mr. M'Kechnie.—A tubercle is just a nodule, I always understood. Dr. Young is asked:—

"5236. Could you see with the naked eye any tubercles deposited on it (that is on the bullock)?--I could not."

That is quite distinct as to the 8th or 9th of May. I need not give your Lordship any reference to the evidence of the practical men. My learned friend calls these men empirics. I don't know why he calls them that. They study their own business like other people, but at all events your Lordship has four of them, and also some fleshers, saying that as practical men they would all have passed these animals. Now, if I am correct in my view of the law, that is just the very thing that is wanted. I should like, before closing, to make one or two observations upon the witnesses for the prosecution referred to by Mr. Ure. With regard to Mr. M'Lellan, I refer your Lordship to question 242; Beresford, question 337; and Dr. Russell, question 7299. Dr. Russell's evidence is very important in view of what Professor M'Call afterwards admitted. He says, "I inferred what I saw was tuberculosis from the presence of these tubercles, but not from any other reason." Now, we have it from Professor M'Oall that there may be tubercle without tuberculosis, and we have it from Dr. Russell himself that he knows nothing whatever about this, except what he has read from this blue book and from the report of the French Congress. Now, I don't think that goes much in the way of condemning the thing. I next refer your lordship to Dr. Littlejohn's evidence, question 1062, where he admitted in answer to me that if the lungs floated in water he was of opinion that there was either very little tuberculosis in them or none at all. He was asked also as to crepitation, and it is of course a matter of common sense that there could have been no tuberculosis if the lungs floated or there was crepitation. Your Lordship has an experiment made by Dr. Hime, who speaks of this matter at questions 4043 and 4044. He says that he made experiments with various portions of the lungs and they floated in water, so that I claim Dr. Littlejohn as an authority on my side upon that matter. There

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were other two gentlemen—I pass over Mr. M'Geoch, who comes from Paisley, and who evidently cannot spell; I need not say much about him—but Mr. Robinson and Professor Limont are two distinguished men. Mr. Robinson must have been born a scientific genius, because he disbelieved one of the most distinguished men in Europe when he was at the age of twenty. I am sure when I was at that age I would have believed anything that a professor told me, and most men would have believed it, but he disbelieved the eminent man at the age of twenty, and he reversed his father's practice when he got home. I don't wonder he had much confidence in himself; but I think I destroyed his evidence entirely. He is, I think, the hero of the prepectoral gland.

Sheriff Berry.—No, that was Mr. M'Geoch and Professor Limont.

Mr. M'Kechnie.—I think Mr. Robinson found the bacilli there also. At all events, I don't care where he found them; but he said he found the bacilli of tuberculosis in the bullock.

Sheriff Berry.—In the lungs, as far as I remember.

Mr. M'Kechnie.—In the apex of the lungs probably. Now, I refer your Lordship to his answer 1421, in which he admits that he did not try Koch's test—

“1421. Did you try Koch's test to see if these were bacilli of tuberculosis?—No, I did not try his test.

“1422. Are you aware that Koch first discovered them by a “scientific test?—Yes.

“1423. And was able only by that test to set them apart from “other bacilli?—Yes; but there are numerous other stains by “which they have been tested by others.”

I could hardly expect Mr. Robinson to try Koch's test; Koch is too eminent a man for Mr. Robinson to follow, and accordingly he took his own test. Now, I pray your Lordship to notice that on this matter Mr. Robinson may be very much mistaken. I refer your Lordship to what we have been calling Koch's book, in which you will find a passage, beginning at page 73, where Koch takes six pages to describe what he calls his test, pointing out its various stages and the danger of error at every stage; and then he sums up the results, and it is not until he goes through all these various stages with the greatest degree of accuracy that he is able to say that the bacilli of tuberculosis are present in the lungs, or whatever organ he may be examining. But Mr. Robinson did not take Koch's test. Koch's test, as it is called, is a process rather than a test; it is a successive series of washings and tubbings, and cleanings and washings again, until he is absolutely certain he has got the proper bacillus. Now, I think Mr. Robinson's evidence is vitiated just by the fact that he did not take the only test known to science. He adopted the Robinson test, and Mr. Limont seems to have done the same thing. Dr. Coats says he found bacilli in this bullock, but the same observation may be made of him. However, I offer this observation upon his evidence. Your Lordship will find that in cross-examination—Mr. Jameson cross-exa-

mined him, but I had to ask him a few questions at the end of Mr. Jameson's examination—he admitted that he had not found any bacilli in the glands of this animal. He may not have made the same mistake as Mr. Robinson made, but in his cross-examination he admits that he did not find them in any of the glands, and that shows that if the bacilli of tuberculosis were present in the bullock yet they had not got into the lymphatic system.

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Sheriff Berry.—Where is the statement that you are now referring to.

Mr. M'Kechnie.—Your Lordship will find Dr. Coats' evidence on page 128.

"2248. Did you examine any of the lymphatic glands of the bullock except those that you have stated?—I looked at the lymphatic glands.

"2249. At all of them?—Certainly not.

"2250.—At which of them?—I looked at the lymphatic glands of the trachea. It looked to me as if some of these had been removed before I went. I found only one small gland, but I should expect to see several.

"2251.—Did you examine for bacilli in that gland?—I am not sure; I think not.

"2252. Why?—I did not see any evidence of tuberculosis."

So that so far as we know, the glands of this animal were unaffected. Some of them evidently had been removed, but there is no suggestion in the case that that would be done otherwise than for the purpose of experiment. Now, I think Limont and Coats and Robinson and M'Geoch are the only witnesses who say they found bacilli there at all, but I really don't care whether they found bacilli or not, unless your Lordship is perfectly satisfied that the bacilli found were those of tuberculosis. I think with regard to the bullock, your Lordship has it that no bullock ever was condemned in this way before. There is no evidence that animals at that age take tuberculosis, and your Lordship has its condition quite sufficiently explained by over-driving or otherwise. At all events, it is a matter of universal admission that there was hardly anything at all wrong with it. I am sorry to have detained your Lordship so long, but I submit that we are right upon the whole case, and that as it is clear that this bullock was not so affected as to make it unfit for human food your Lordship should not condemn it.

Mr. Jameson.—There are only three points on which I should like to say one word. The first is with regard to the phrase my learned friend used of tuberculous milk and tuberculous flesh. Tuberculous milk, as used in all these experiments and in this inquiry, means, not as my learned friend, I think, left it open to mean, if he did nothing more, milk from a cow which was affected by tuberculosis; but it meant in every case milk from a cow which was affected with tuberculosis in the udder and the mammary glands, which is a very different thing. You destroy the analogy altogether between what we are dealing with, the

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 Mr. Jameson. flesh of an animal with localised tuberculosis in the lungs and the milk, if you take away that consideration. I would refer your Lordship in proof of that to Dr. Littlejohn's evidence before the Privy Council Committee. He is there asked—"7719. Then, "so long as the udder of the cow is sound you would not be "suspicious of the milk from that cow being unwholesome?—" "Undoubtedly not, unless there was the accompanying emacia- "tion, which of itself is always suspicious." That is to say, unless there is generalised tuberculosis with the accompanying emaciation. The other passage is at question 7650, where he is asked—"7650. Have you formed any opinion as to the desira- "bility of examining milk from living cows by the microscope "and other means?—Yes. I have seen such milk exhibited in "open Court and examined in open Court, and specimens handed "to the judge in order to enable him, through a microscope, to "see the peculiar bacillus of tubercle. That is in the cases where "the udder has been markedly affected." Then he goes on to say that he would not propose to make the examination of milk for the tubercle-bacillus a separate procedure in the inspection of a dairy, so that your Lordship will see that where tuberculous milk is spoken of it is not milk from a cow whose lungs, for example, or heart or some other organ is affected with tubercle, but a cow whose udder and mammary glands are affected.

Mr. Ure.—How does that appear from the evidence?

Mr. Jameson.—I am referring to the evidence of Dr. Littlejohn, and that is the sense I think in which the expression is used throughout. Then as to tuberculous flesh, I submit that tuberculous flesh as used throughout all these experiments which are referred to in the book, and in the evidence, is flesh which is either from an animal affected with general tuberculosis or it is tuberculous flesh from the diseased portions, such as the lungs or other parts. Then my learned friend said—and this is the third point—that he pointed to evidence in support of the conclusions in paragraphs 45 and 46 of the Privy Council report. But turning to these, I think your Lordship will see that Dr. Cameron's evidence at question 7939 is simply evidence of opinion and of nothing else. It is not evidence of fact at all, and what I maintained was, and what I still maintain is, that there is no evidence of fact to support the conclusions in paragraphs 45 and 46 of the report of the Committee. Your Lordship will see that Dr. Cameron's evidence at question 7939 is this:—"Then it is "quite your opinion that all the flesh of all tubercular animals "should be destroyed?—Yes, no matter in what condition, they "ought to be destroyed; I must say that, be the condition satis- "factory or otherwise, I unhesitatingly condemned any animal "that had tuberculosis in any part of it." Therefore I maintain that that is simply matter of opinion. Then Mr. Lingard says:—"8039. So that actually the tissues of an animal would be "infective at a period when it could not be recognised by the "naked eye?—Yes, it would. 8040. With respect to the employ- "ment of meat from animals diseased from tubercle, I suppose "you would insist that all meat from tuberculous animals should

“be destroyed?—Undoubtedly I should.” Now, that is not evidence of fact either; it is matter of opinion, and I still submit that there has been nothing proved, there has been no fact pointed out, which supports conclusions that “the disease may affect the flesh, and that the ordinary methods of cooking are often insufficient to destroy the bacilli buried in the interior of the limbs.” The only thing my learned friend can point to in answer to the challenge is that evidence of opinion on the part of Dr. Cameron and Mr. Lingard; and their opinion is just worth what any other opinion unsupported by facts is worth. I would again point out that nowhere has it been proved, in this inquiry or elsewhere, that the flesh of an animal locally affected with tuberculosis being injected into another animal has produced tuberculosis—that there is no such evidence either in this case or in any of the experiments we have had.

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Mr.
Jameson.

Sheriff Berry.—I am very much obliged to counsel for the assistance they have given me in this case. Of course it is a case involving very great interests and is one of very great importance, and therefore I shall not be expected to give my judgment straight off. It will be given as soon as I am able to prepare it, and will be issued in the ordinary way, through the books of Court. Of course, it will not be necessary for the parties to be present.

Avizandum.

INTERLOCUTORS BY SHERIFF BERRY.

In the Case of HUGH COUPER.

GLASGOW, 20th June, 1889.—Having considered the petition and proof and whole proceedings, and heard counsel for the parties, and it being admitted that the carcase of the bullock referred to in the petition was intended for human food, finds it proved that the said carcase was unfit for the food of man; therefore, in terms of the Public Health (Scotland) Act, 1867, orders the same to be destroyed, or to be so disposed of as to prevent the same being exposed for sale, or used for such food, and that at the sight or to the satisfaction of the petitioner, and decerns.

ROBERT BERRY.

Note.—This petition, at the instance of the clerk to the Magistrates and Council of Glasgow as the Local Authority for the city under the Public Health Act, after narrating the seizure on 9th May last, in the Moore Street slaughter-house, of the carcase of a bullock belonging to the respondent Hugh Couper, wholesale butcher, Glasgow, which appeared to the sanitary inspector to be unfit for human food, prays for an order under the Act that the same may be destroyed or so disposed of as to prevent its being exposed for sale or used for human food. On the case coming before me on 24th May it appeared that the parties were at issue on the question whether at the time when the seizure was made the carcase was unfit for human food, and therefore, in terms of the Act, I ordered a proof to be taken on that point. A proof was accordingly taken on 28th May and following days to the 1st of June inclusive. I have since, on 17th June, had the benefit of a full review of the case, as presented on the proof, by counsel for the parties.

At the time when the bullock was slaughtered it had, as the evidence shows, all the appearance of a prime bullock in good condition. It was one of a lot of twenty bullocks bought by the respondent on 8th May, at a price averaging above £22 a head.

The animal was slaughtered on that day, and Mr. M'Lellan, inspector of police, who has the duty of supervising the passing of meat in the slaughter-house, having observed what he described as an inflammatory rash on the left side like the formation of tuberculosis, and acting in accordance with instructions

which had been given to him on 26th April by the Chief-Constable, called the attention of Dr. Russell, Professor M'Call, and Dr. Young to its condition. These gentlemen inspected the carcase on the same day, 8th May, and in his evidence Dr. Russell described the symptoms which he saw. The statement given by him was to the effect that the pleural surface of both sides, and especially of the left side, were diseased, the disease, in his opinion, being tuberculosis, the under or pleural surface of the diaphragm presenting the most characteristic appearances. There was also tuberculosis on the costal pleura on the left side, and also, although to a less degree, on the right side. The disease he regarded as acute. The surface of the left lung was covered with inflammatory lymph, and it had apparently been adherent to the walls of the chest. That resulted from the inflammatory action of pleurisy, the pleurisy having, in his opinion, been caused most probably by the irritation of the tubercular virus, and the disease known as tubercular pleurisy being that which was the matter with the left lung. There was some congestion of the substance of the lung, and on the posterior border of it there were nodules perceptible to the touch. The costal pleura, or lining of the ribs, and the pleural surface of the diaphragm were also, in his opinion, affected with tuberculosis. His conclusion was that the bullock at the time when it was slaughtered was suffering from acute tuberculosis, and that the carcase was unfit for human food. The evidence of Professor M'Call was to a similar effect. He stated that, besides tubercular exudation, there were small tubercular nodules on the costal pleura and the diaphragm, and also small caseating tubercles in both lungs.

The evidence of Dr. Young, the third of the three gentlemen who examined the carcase on 8th May, was to a different effect. He did not, he said, observe any nodules or tubercles, and he thought that Professor M'Call was wrong in saying that there were symptoms of acute tuberculosis.

The animal, or portions of it, were, on subsequent dates, examined by different gentlemen on behalf both of the petitioner and of the respondent. The evidence of those called as witnesses for the respondent may be described generally as negative in as far as regards any appearances of tubercular disease. While admitting the existence of evidence of inflammation and of adhesion of the pulmonary pleura to the costal pleura as the result of inflammation, they stated that they saw no symptoms leading to the conclusion that the disease had been tubercular pleuritis. It may be offered as an explanation of this marked difference between the two sets of witnesses, that the principal

witnesses for the respondent did not see the carcase until the 16th May, and in the interval between the 8th and the 16th parts of the carcase had been taken away for microscopical examination. This explanation, however, does not entirely account for the discrepancy, seeing that Dr. Wallace, the medical officer of health for Greenock, who was called as a witness for the petitioner, did not examine the carcase till the 17th of May, and he stated that he then found in the lung of the bullock a small tubercular nodule, about the size of a small horse bean, in a state of caseation, and that he also found another nodule about the same size surrounding a vein, with recent inflammatory exudation surrounding the part. From these appearances he arrived at the conclusion that the animal had been suffering from tuberculosis.

Apart from the symptoms of tuberculosis which are thus spoken to by the witnesses to whom I have referred, it is important, more especially in view of a distinction which has been taken between localised and generalised tuberculosis, to attend to the results obtained, according to some of the witnesses, from examination under the microscope.

Mr. Robinson, the inspector under the Local Authority of Greenock, a gentleman whose training and studies in veterinary science have been of a very complete character, stated that, besides examining the carcase on 9th May, he took away with him portions of the diaphragm, of the left lung, and of the mesenteric glands, and that on making a microscopical examination he found in the lung the bacilli characteristic of tuberculosis, and, although not bacilli, he found signs indicating the commencement of tuberculosis in one of the mesenteric glands. He concluded from the symptoms thus presented to him that tuberculosis had begun to spread through the whole vascular system. Mr. M'Geoch, the inspector for the Local Authority of Paisley, stated that he cut into the carcase between the first and second ribs, and removed one of the prepectoral glands situated about eighteen inches from the part of the chest which manifested tubercular lesions. Along with Professor Limont, of the Glasgow Veterinary College, he examined a specimen of the gland under the microscope, and he saw in it the bacilli of tuberculosis. He was, therefore, of opinion that generalisation of tuberculosis had begun. The evidence of Mr. M'Geoch is corroborated by Professor Limont, and their evidence is important in this respect, that, apart from its showing that the disease had begun to spread through the animal's system, the prepectoral gland is a part of the animal which would be sold for food, and which would not be removed by the process of stripping the carcase,

a process which, according to some of the witnesses, would have been a sufficient safeguard against risk. Evidence confirmatory of the conclusions from microscopical examination come to by the witnesses whom I have mentioned was given by other witnesses, and in particular by Mr. Maylard and Dr. Coats.

To the significance and the importance of the bacilli of tuberculosis having been seen in different parts of the animal it is hardly necessary for me specially to advert. I take it to be established by the evidence as now the accepted view of most scientific men who have investigated the subject, that the disease known as tuberculosis is not only accompanied but caused by a minute specific organism, the bacillus tuberculosis, and that the bacillus in the tuberculosis of oxen as well as in the tuberculosis of some others of the lower animals is the same as that which is found in tuberculous diseases in human beings. Most of the leading witnesses for the respondent, while saying that no symptoms of tuberculosis were found in the bullock by them, admitted that if bacilli, or, as some of them expressed it, the virus of the disease were shown to exist in the meat or the lymphatic glands, the carcase ought to be condemned. That view was in effect expressed by Dr. Goldie, Dr. Imlach, Dr. Hime, and Dr. Hill. The general opinion entertained by Dr. Hime is expressed shortly in a small work by him, entitled 'Handy Guide to Public Health,' published in 1884, in which he says that the meat of an animal with infectious disease communicable to man, under which head he places tuberculosis, should be regarded as unfit for food. He stated in evidence that he adhered to the opinion so expressed. This view, that tuberculosis is a disease communicable from one of the lower animals to man, must, as the evidence shows, be regarded as an established scientific fact. The disease is communicable in various ways—by inhalation, by ingestion (swallowing), and by inoculation. Opinions seem to differ as to whether ingestion is the most common way in which it is communicated. In support of the view that it is not a very common mode of communication the fact is relied on, that in the human subject tuberculous disease is generally found in the lungs in the form of pulmonary phthisis, while tabes mesenterica, the form in which it appears as affecting the mesenteric glands—that is, the glands leading from the alimentary canal—is relatively not so common. It is also the case that the bacilli of tuberculosis are rarely found in the muscle or flesh of an animal. On the other hand, the bacilli, as is shown by the microscopical examinations in the present case, appear in the glands which are used for food; and the fact that phthisis is the most common form of the disease in man loses much of its significance when it is considered, that the bacilli may be readily

carried from one part of the body to another by the circulating fluids, by the blood or by the lymphatic stream, or, as has been suggested by Koch, the discoverer of the tubercle-bacillus, by the help of what are termed wandering cells. But whether ingestion be or be not the commonest way in which the disease is communicated, it must certainly be regarded as one mode of its communication.

A Departmental Committee, which was appointed by the Lord President of the Council in April, 1888, "to inquire into the nature and extent of tuberculosis, and the means to be adopted to arrest its progress," and which reported on 16th July, 1888, expressed it as their opinion that, "although the bacilli may be found but rarely in the flesh, still the chance of their being present either there or in the blood is too probable to ever allow the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals."

The opinion thus recorded by the Departmental Committee, condemning the flesh of a tubercular animal as unfit under any circumstances for food either of man or of the lower animals, has an obvious bearing on the question with which I have to deal in this case. But my immediate object in referring to the paragraph is for the purpose of emphasising the conclusion that tuberculous disease is communicable by ingestion. If it were not so communicable the view of the Committee would have no foundation to support it. I take it, however, that there really is little dispute as to the communicability of the disease by ingestion. It was admitted at the debate on the part of counsel for the defence that the disease may be communicated by the drinking of milk, and if that be so it is impossible to maintain that it cannot be communicated by the eating of flesh. Indeed, one need not look further than to the practice of condemning the meat of tuberculous animals as hitherto practised in Glasgow and elsewhere, in order to see that the transmissibility of the disease by ingestion has long been recognised. Except on the footing that the meat was the medium of the transmission of the disease, it would be unnecessary and wasteful to exclude from the food supply the carcasses of animals which had suffered from tuberculosis, however generalised and extensive. Still the question remains, whether, in accordance with the view expressed by the Departmental Committee and the practice adopted by some Local Authorities in Scotland, the condemnation ought to extend to the case of every animal shown to have been affected with tubercular disease, or at all events whether the rule hitherto followed in Glasgow can be considered as a sufficient safeguard.

In Glasgow the practice has been, in cases where the disease, as far as appeared to the naked eye, was confined to the internal organs, to "dress" or "strip" the carcase—that is, to strip away the pleura or lining membrane of the chest cavity and the internal organs, and to allow the rest of the carcase to pass into the market for food. My conclusion from the evidence is that that is not a sufficient protection against the risk of communication of the disease by ingestion. There may be no appearance visible to the naked eye of the action of the tubercular bacillus in a particular part of the animal, and yet it may not improbably be there. The presence of the agent of the disease must precede the visible results of its action. Indeed, the present case affords an illustration of the danger of inferring from the absence of symptoms visible to the unaided eye that the disease is localised. As far as could be judged by such symptoms, there was but little indication of disease beyond the internal organs. Yet, on examination under the microscope, bacilli were seen in the pre-pectoral glands—a part of the animal which, although the carcase had been stripped, would have been passed out into the market as fit for the food of man.

A good deal has been said in the course of the case as to the degree of protection against danger which may be afforded by the meat of an animal affected with tuberculosis being cooked. The conclusion come to by the Departmental Committee to whose report I have referred was that "the ordinary methods of cooking" are often insufficient to destroy the bacilli buried in the interior "of the limbs." The evidence in this case leads me to the same conclusion. It seems, indeed, that the life of the bacillus may be destroyed by exposure to a temperature even considerably under the boiling point of water, provided the exposure is for a lengthened time; but a large portion of cooked meat is used for food without having been subjected to the action of a high temperature for any great length of time, and, in the case of roasted meat in particular, it is often eaten underdone, with the juices little affected by the action of heat. Besides this, one mode in which the bacilli are propagated is by spores, and in the opinion of scientific men the spores, like the seeds of vegetables, are less easily affected by heat than their parent bacilli. Consequently the spores may survive an amount of cooking which might be fatal to the bacilli themselves. The evidence leads me to the conclusion that it would not be proper to trust to cooking as a sufficient protection.

The conclusion which I have formed on a careful consideration of the whole evidence is, that at the time when the carcase of the bullock was seized it was unfit for the food of man, and there-

fore that the prayer of the petition should be granted. In support of that conclusion I do not think that I require to take up the position that the carcase of every animal shown to have suffered from tuberculosis, however limited in degree or apparently in locality, must be condemned. That position has the sanction of the recorded opinion of the Departmental Committee which I have quoted—an opinion to which great respect is due, and in which I should be sorry to have it inferred that the evidence does not lead me to concur. But the present case does not rest merely on the probability or chance of the bacilli having been present in parts of the animal beyond the internal organs, or those portions which would have been removed by stripping. The disease is shown to have been not merely local. It was so far generalised as to extend to the lymphatic glands, and to parts which would have gone out into the market for food.

It is right also for me to say that I do not proceed on the view that the appearance of the flesh of the bullock to the naked eye was such as would justify its being condemned. It is true that some of the evidence for the petitioner might seem to support such a view. I may refer in particular to the statement of Dr. Littlejohn to the effect that the flesh near a tuberculous deposit, which he saw on the pleura, was soft and deficient in colour and in consistency, and exhibited iridescence, which he has found to be associated with previous illness. I am far from suggesting that the witness did not observe the local symptoms which he describes; but the evidence as a whole does not bear out the view that the flesh presented such an appearance as would show that it was unfit for food. My judgment on the case is based on this, that tubercular disease is shown to have existed in the animal at the time when it was slaughtered, and to have already begun to spread through the system.

In coming to the conclusion that the prayer of the petition should be granted, I have been deeply sensible of the responsibility of condemning, as unfit for food, meat which under the practice hitherto followed in Glasgow, and still observed, as the evidence shows, in various large towns in England, would apparently have been allowed to pass out for consumption. That practice, however, I am led to think, is attended with danger to the public health.

Reference has been made, in the course of the case, to the fact that of late years there has been a marked diminution in the mortality from tuberculous diseases in Glasgow and in the country generally, while at the same time there has been an increase in the consumption of butchers' meat. It is suggested, therefore, that there can be no great reason for interfering with

the system under which butchers' meat is being sold for food. The improvement, however, which has taken place, and for which we may be thankful, affords no ground for abstaining from the removal of any danger or any impediment to further improvement which may be shown to exist. Diseases of the tuberculous class are widespread and varied in form, and entail very grave consequences. They still contribute too largely to the mortality, besides involving much suffering and distress, even in cases where fatal consequences do not ensue; and, unless the evidence of men of high scientific authority is to be disregarded, one of the means by which they are propagated is the consumption of the meat of tuberculous animals. It may be that some persons are disposed to assign too great an importance to that source of danger, and to over-estimate its consequences; and against the weight to be given to their views must be placed a certain economic loss which will be involved in allowing them effect. Just, however, as there is possibly a disposition on the part of some to over-estimate the injury to the public health which may arise from allowing the meat of tuberculous animals to go into the market, so on the other hand there may be an exaggerated apprehension of the extent to which the condemnation of carcasses under the new rule adopted by the Local Authority will operate. It appears from the evidence that only about one-half per cent. of the cattle exposed in the Glasgow market are affected with tuberculosis, and of those so affected about one-half are condemned under the system which has hitherto prevailed, while about one half are passed. In other words, a condemnation of all the animals so affected would only involve the additional condemnation of a quarter per cent. The loss even of that proportion of the food supply is much to be regretted. But in weighing its importance I am of opinion that it is insufficient to overcome those considerations in the interest of the public health which must be regarded as paramount.

R. B.

In the Case of CHARLES MOORE.

GLASGOW, 20th June, 1889.—Having considered the petition and proof and whole proceedings, and heard counsel for the parties, and it being admitted that the carcase of the cow referred to in the petition was intended for human food, Finds it proved that the said carcase was unfit for the food of man: Therefore, in terms of the Public Health (Scotland) Act, 1867, orders the same to be destroyed, or to be so disposed of as to prevent the same being exposed for sale or used for such food, and that at the sight or to the satisfaction of the petitioner, and decerns.

ROBERT BERRY.

Note.—In this petition the clerk of the Local Authority for the city prays for an order under the Public Health Act for the destruction of the carcase of a cow belonging to the respondent, which was seized on 9th May last in the Moore Street slaughter-house, and which appeared then to the sanitary inspector to be unfit for human food. A proof has, as in the similar case against Hugh Couper, been taken on the question whether the carcase was at the time of seizure unfit for food; and for the general views on which I have proceeded, apart from the condition of the particular carcase, I think it sufficient to refer to the note to my judgment in Couper's case.

The condition of the carcase to which the present petition relates was much more unfavourable than that of the bullock in Couper's case. By the evidence on both sides it is shown that there were abundant symptoms patent to the naked eye that the cow was suffering from tuberculosis at the time when she was slaughtered. As described by Dr. Russell, the walls of the chest on both sides presented vegetations, that is, flesh projections from the natural tissue of the pleura, caused by the action of the tubercular bacillus, and having the character of tuberculosis of a chronic type; the posterior portions of both lungs were packed with tubercular deposit in the softening stage, and the deposit was assuming a purulent degeneration, which, he said, was a peculiarly obnoxious stage. Other evidence showed that tubercular deposit was present in the prepectoral and inguinal glands of the animal. From what was stated by witnesses both for the petitioner and respondent, it may be gathered that in certain parts the disease had been arrested, and was in what some described as a quiescent or stationary condition. The evidence, however, satisfies me that it was only in particular parts that the disease had been checked. Bacilli were seen by more than one witness under the microscope; and the fact of the disease being present in the glands was, if proved, sufficient in the opinion even of witnesses for the respondent to condemn the carcase as unfit for food. I have, therefore, felt no doubt that the prayer of the petition in this case should be granted. R. B.



